THE ROLE OF YOUNG CHILDREN'S MENTAL REPRESENTATIONS AND THEIR PROXIMAL AND DISTAL ENVIRONMENTS IN THE BROADER CONTEXT OF RESILIENCE

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ABSTRACT

The three studies in this dissertation can be seen within the broader context of resilience research. Based on the socio-ecological model, aspects of children's self, their proximal and distal environment are included and analyzed with regards to children's social-emotional outcomes. The investigations contribute to a better understanding of resilience by examining selected factors in the child and its environment, which can be regarded as important components of resilience processes. For this reason, the construct of resilience is introduced and linked to the issues that the individual studies address. On the individual level of the child, the development and initial validation of a self-report instrument for preschoolers to assess their self-perceived ability, task difficulty, and motivation was reported in the first study. Further, coherence and content of children's conflict-based narratives, which are supposed to reflect their mental representations, were assessed and discussed as a self-report instrument for young children in the second study. Coherence and content of conflict-based narratives were tested for direct, mediating, and moderating effects. As an aspect of proximal environment, exposure to family risk was included in the analyses of the conflict-based narratives. The third study examined direct and moderation effects of qualitative and quantitative indicators of center-based childcare on children's problems and competences. Therefore, this study refers to children's distal environment. Additionally, multiple biological and psychosocial risks were included. The results of the three studies are linked to resilience research, and implications for practice and further research are discussed. Most notably, coherence and content of conflict-based narratives as well as qualitative and quantitative indicators of center-based childcare were found to have the potential to serve as protective factors on children's social-emotional outcome. Further, the importance of considering children's self reports is emphasized based on the reported findings.

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1 General Introduction

This dissertation is a part of the major research project "Promoting Learning and Resilience in Early Childhood Settings" (Wustmann & Simoni, 2010) conducted by the Marie Meierhofer Institut für das Kind. The aim is to show—on the basis of the three included studies—how different aspects of young children's mental representations and environments affect their social-emotional outcomes. Basis and findings of this research are discussed under the perspective of resilience. Based on Bronfenbrenner's (1979, 1994) socio-ecological model, children's chance to be or become "resilient" is optimized by considering the interaction of protective factors at the individual, familial, and communal level (Benzies & Mychasiuk, 2009). Accordingly, Werner (2011) postulated three sources of protective factors: in the child, in the family, and in the broader social environment. Bronfenbrenner (1994) emphasized the importance of interactional reciprocal processes between an individual and its immediate environments for human development. The family is defined as children's proximal environment with the most relevant influence on children's development. Nonfamilial ecologies of childhood (like childcare centers) are referred to as distal environments (Bornstein, 2012). This classification was adopted in this dissertation. Therefore, this dissertation reports on children's mental representations about themselves (i.e., their abilities, see study 1; Müller, Wustmann Seiler, & Perren, 2014) and their relationships (study 2; Müller, Perren, & Wustmann Seiler, 2014) with regard to their social-emotional outcomes. Additionally, risks in children's family were included, considering their proximal environment. Children's distal environment was addressed in study 3 (Wustmann Seiler, Müller, & Simoni, 2014), which investigated the effects and protective potential of qualitative and quantitative indicators of early center-based care on children's outcome.

The three studies contribute to a better understanding of resilience by examining selected factors in the child and its environment, which can be seen as important components

of resilience processes. This process, however, is not the focus of the investigation.

First, the concept of resilience and resilience research in general are discussed, leading into the relevance of this dissertation. Then, a broader theoretical rationale for each of the three studies is provided.

1.1 Resilience, Risk Factors and Resources

1.1.1 Definitions of Reslience

In recent decades, resilience has been the focus of numerous empirical studies. Whereas there is general agreement on how resilience can be defined on a broad level, definitions of resilience contain and highlight different aspects of this construct. Rutter (2013) stated that "resilience is an interactive phenomenon that is inferred from findings indicating that some individuals have a relatively good outcome despite having experienced serious stresses or adversities – their outcome being better than that of other individuals who suffered the same experiences" (p. 474). Wustmann (2011) referred to different sources of risks and described resilience "as a mental resistance of children to biological, psychological and psychosocial development risks" (p.18). Grotberg (2011) addressed prevention and intervention by defining resilience as "a universal characteristic that allows a person, group or community to prevent, minimize, or overcome the injurious effects of threatening emergency situations" (p. 51). Masten (2011) emphasized the dynamic aspect: "Resilience is the capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development" (p. 494). Crawford, Wright, and Masten (2005) addressed the adaptive aspect when describing resilience research as "a search for knowledge about the processes that could account for positive adaptation and development in the context of adversity and disadvantage" (p. 355). These are just a few of the existing definitions.

Most researchers would therefore agree that the construct of resilience is by far more

complex. Resilience cannot be measured directly and can only be inferred (Luthar & Zelazo, 2003). However, definitions of resilience agree that resilience: (a) describes children who succeed in the face of and despite of adversity (Herrenkohl, 2013; Klika & Herrenkohl, 2013), (b) is not dependent within various domains of life but rather is context or content specific (Fergus & Zimmerman, 2005), (c) encompasses processes and outcome, whereby resilience is a dynamic process throughout life (Rutter, 2000; Scheithauer, Petermann, & Niebank, 2000), (d) is additionally conceptualized as a dynamic process as it refers to transactional processes between child and their environment (Wustmann, 2011), (e) is always theoretically conceptualized and practically experienced dependently of risks, adversities, or challenges (Masten, 2001), and (f) requires the attainment of at least typical or normal developmental (which, however, does not have to be superior to the average in the normal population) (Masten, 2001; Rutter, 2013).

This leads to general questions such as: What are the determining factors that resilient children faced with adversities develop better than expected? And what is the difference in children who struggle when faced with the same risks? On the individual level, resilience is not innate, but there is an innate "vulnerability" for resilience. According to Masten (2011), resilience is not based on extraordinary processes that are specific to certain individuals. Masten instead proposed basic adaptational systems for every child that can be promoted or restricted by environmental factors, such as the family or broader systems, which is in line with the interactive processes described by Bronfenbrenner (1994).

1.1.2 Risk Factors and the Cumulative Risk Model

Basically, a risk is a danger that potentially but not necessarily elevates the probability of a negative outcome (O'Dougherty Wright, Masten, & Narayan, 2013; Opp & Fingerle, 2008). Risk factors can be assigned to the individual, its proximal or distal environment. Furthermore, as already mentioned, these multiple systems are interactive and

therefore have to be considered in investigations of risk effects (Bronfenbrenner, 1994). On the individual level, risk factors are referred to as vulnerability (e.g., biological or psychological characteristics) (Wustmann, 2011). Oland and Shaw (2005) summarized the results of different studies showing that aspects or experiences of both, children's proximal and distal environment can contribute to maladaptive developmental outcomes (i.e., internalizing and externalizing symptoms).

With regard to children's proximal environment, Briggs-Gowan, Carter, Bosson-Heenan, Guyer, and Horwitz (2006) found that disruption in family life increased the likelihood of persisting problems. Sameroff and Rosenblum (2006) reported a list of diverse family-related risk factors that were all negatively associated to preschooler's competences (e.g., a history of maternal mental illness, few positive maternal interactions with the child observed during infancy, head of household in unskilled occupations, minimal maternal education, disadvantaged minority status, single parenthood, etc.). Various family risks could be added to this list, however. Sameroff (2006), on one hand, emphasized the prominent role of the family for children's development. But on the other hand the recognition of other contributors and comprehensive analyses are needed to understand problems in children's development. As Sameroff (2006) stated: "It is not a single factor in the child, the family, or the social surround that causes difficulties, but a set of factors, that probabilistically contribute to the outcome" (p. 55). Environmental risks even showed to undermine and limit children's individual potentials for a resilient development (Sameroff & Rosenblum, 2006). In addition to the negative effect at present, internalizing and externalizing problems caused by risks in early childhood can persist and have severe and long-lasting consequences for children's development (e.g., Fanti & Heinrich, 2010; Lavigne et al., 1998; Pihlakoski et al., 2006).

The cumulative risk model is a commonly used approach for developmental

predictions. In contrast to other approaches that emphasize the predictive weight of single variables, the cumulative approach is not based on the type or weighting of factors but on the addition of different risk factors into one single variable. What the single variables that are cumulated contribute to the developmental outcome cannot be identified applying this approach, but it takes into account that not only quality but also quantity of risks has a negative effect on children's social-emotional development (e.g., Hooper, Burchinal, Roberts, Zeisel, & Neebe, 1998; Sameroff, Seifer, Baldwin, & Baldwin, 1993). Several studies (e.g., Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Sameroff & Rosenblum, 2006) found empirical support for the assumption that there is a cumulative effect of risks on later maladjustment and, furthermore, for the stability of risk factors for most children and most families, respectively (Burchinal, Roberts, Hooper, & Zeisel, 2000; Sameroff et al., 1993; Sameroff & Rosenblum, 2006). Besides empirical verification, the cumulative risk approach accounts for the real accumulation of risk factors in the same individuals (Obrandović, Shaffer, & Masten, 2012; Sameroff & Rosenblum, 2006). Therefore, the cumulative risk approach is based on evidence as well as on reality of many children's experiences.

1.1.3 Children's Resources

Research studies have identified several factors that can be protective against negative influences. Several researchers (e.g., Brook, Whiteman, Gordon & Cohen, 1986, 1989; Garmezy, Masten, & Tellegen, 1984; Luthar, Cicchetti, & Becker, 2000) have developed models (e.g., compensatory model, challenge model, protective factor model, protective – stabilizing model, protective – reactive model, and protective – protective model) to explain the mechanisms of protective factors in interaction—or not—with risk factors. According to the models, protective factors act in different ways regarding the relation of risk and outcome (e.g., in terms of neutralizing exposure to risk independently of the risk factor), or protective factors have a buffering impact on the relation between risk and outcome, or protective

factors have an effect by influencing another protective factor. The different models do not exclude each other. Instead, they explain different mechanisms of or between protective and risk factors. A widely used model is the main (or direct) effects model (e.g., Masten, 2012), which postulates that a variable directly effects mental health, regardless of the levels of adversity experienced. Another commonly used model is the interaction model (moderation), which tests for the buffering effect of a variable. Masten and Powell (2003) explained:

> Moderating models, [...], test for interaction effects in which a variable functions to alter the impact of risk or adversity on the outcome, increasing or decreasing individual susceptibility to the harmfulness of the stressor or protecting the child in some way from the full effects of the threat. (p. 10)

However, Fingerle (2011) proposed that we use the term resources rather than protective factors, as on the one hand there would not be a distinct separation of risk and protective factors, and on the other hand, the presence of protective factors would not invariably lead to positive developmental outcomes. Resilient children would therefore be those children who are able to use the available resources in an adaptive and flexible manner (Fingerle, 2011). Nevertheless, several resources have been identified that are relevant in the context of this dissertation: (a) Positive self-representations (e.g., self-efficacy, self-esteem) and self-regulation are important resources at the individual level (e.g., Masten & Coatsworth 1998; Rutter, 1987), (b) Oppenheim (2006) emphasized the importance of the ability to process experience in a coherent and meaningful way in terms of affective meaning making processes for one's actual and later well-being and "more broadly, for understanding mental health and psychopathology, resilience in the face of stressors or dysregulation and disorganization" (p. 772), (c) The family context—as young children's main reference—is crucial to children's social-emotional development. For this reason, it is generally assumed that there is a causal relation between exposure to family risk and the development of

internalizing and/or externalizing problems in preschool children (e.g., Mäntymaa et al., 2012; Shaw, Vondra, Hommerding, Keenan, & Dunn, 1994; Zeanah, Boris, & Larrieu, 1997). However, a child's family can provide various resources for a positive development at an interactional level (e.g., caring, respectful, responsive interactions) (Wustmann, 2011) or by factors like stable and adequate income, adequate housing, family structure, and so on (Benzies & Mychasiuk, 2009), and (d) Although family environment has been shown to affect children's developmental outcomes more than their distal or broader environments like childcare centers (e.g., Deater-Deckard, Pinkerton, & Scarr 1996; NICHD, 2000), childcare centers are the context of daily experiences for many children, and therefore even small effects have to be considered in terms of children's resources. Especially for children who are exposed to family risk, high-quality centre-based care may provide an important environmental resource. Werner (2012) emphasized the social support of members in the community (e.g., peers and teachers), as they are exposed to the same circumstances. Peer acceptance, supportive mentors, and access to quality childcare can be provided in children's broader environment (Benzies & Mychasiuk, 2009).

In the following paragraphs the specific meaning of the three studies in this dissertation are discussed with regard to children's developmental phase and, in a larger context, resilience.

1.2 Children's Mental Representations about Their Abilities and Their Relationships

1.2.1 Self-Representation of Ability

The theoretical rationale of the Müller, Wustmann Seiler et al. (2014) was based on Nicholls' (1978, 1980, 1984; Nicholls & Miller, 1983) theory about the development of the concepts of self-perceived ability and perception of task difficulty. Additionally, motivation was introduced as an allied construct (see section 3.2). However, the focus of the reported investigations was on self-perceived ability as the crucial element, which is also relevant in

terms of resilience (see section 1.2.1.2).

Self-representations are described as cognitive schemas. Beck and Dozois (2011) defined cognitive schemas as "organized structures of stored information that contain individuals' perceptions of self and others, goals, expectations, and memories" (p. 398). Early childhood experiences are supposed to form and influence children's cognitive structures and in turn their behavior. Self-perception of ability, which, however, is a form of self-representation, is of great interest in developmental research, as it is related to self-efficacy development, achievement motivation, and actual achievement and thus can have consequences for children's immediate and distant future and their development of mental health.

According to Bandura's social cognitive theory (Bandura, 1977, 1982, 1997), belief in one's capability to perform a specific action required to attain a desired outcome is one of the main factors affecting human agency through cognitive, motivational, affective, and selective processes. Perception of one's own abilities in general is conceptualized as being task or domain specific. Persons can have more or less consistent beliefs in their abilities in different domains, which can develop independently and also in diverse directions. A more global self-judgment would be the self-concept of ability (Pastorelli et al., 2001).

On the one hand, improving or enhancing children's self-perceptions has multiple benefits. Studies have indicated that a positive perception of self-competence, for instance, promotes adjustment and success in school and is correlated with peer acceptance (e.g., Coplan, Findlay, & Nelson, 2004; Marsh, Ellis, & Craven, 2002). Furthermore, theories of motivation compromise competence beliefs as an important factor (Eccles & Wigfield, 2002). On the other hand, Han, Weisz, and Weiss (2001) showed that beliefs about control and competence were specifically related to internalizing and externalizing psychopathology, which was considered in Müller, Wustmann Seiler et al. (2014) (see most notably section

3.2.4.2 and 3.4.3.3). Within a developmental perspective, awareness and perception of one's own ability requires the formation of the self and, consequently, has to consider children's cognitive developmental stage.

1.2.1.1 The Developmental Perspective

The process of becoming self-aware is dynamic beginning from birth on (Rochat, 2003). Although newborns' actions are reflexive, newborns seem to be capable of a rudimentary distinction between themselves and the environment (Howe & Courage, 1993, 1997); for example, from a very early age infants differentiate perceptually between self- and non-self-stimulations. By experiencing contingencies, they attain a sense of their ability to control objects beyond themselves on an implicit level. At this stage, children are not conscious of the dependency of success on their own capability, due to the not yet developed cognitive representational skills required for self-evaluation (Stipek, Recchia, & McClintic, 1992). By the remission of reflexes and the onset of cortical regulation, an understanding of causality and ensuing intentional behavior becomes possible.

From the second year of life, children become "self-conscious" and establish an early autobiographic memory that allows them to store experiences that happened to "me" (Howe & Courage, 1993,1997; Rochat, 2003). Furthermore, they can attribute success to themselves as the cause of the effect due to expanding self-objectification (Bischof-Köhler, 2011). Children at this stage can anticipate the reactions of others; they try to elicit positive and avoid negative reactions to their activities (Stipek et al, 1992). Heckhausen (1984) described the experience of competence at this age as "wanting to do it oneself." According to Eder und Mangelsdorf (1997), the necessary cognitive structures to process information about oneself are developed at the age of 3 years. Children are now able to build categories and organize things, accordingly leading to an internal causal attribution by continuing differentiation. They are able to define their performance independently of adults' reactions (Stipek et al.,

1992). Taking into account these developmental factors, it can be assumed that the assessment of self-perceived ability is already possible at this young age (i.e., about at the age of 3 years).

1.2.1.2 Self-Perception and Resilience

In most studies on resilience, the existence of a positive sense of self or one's own competence has been considered to be an important protective factor in coping with adversity and adapting to difficulties (Benzies & Mychasiuk, 2009; Masten, 2007; Rutter, 2000; Werner, 2008). Additionally, the experience of competence is the primary source of self-efficacy (Bischof-Köhler, 2011; Scholz, Gutiérrez-Doña, Sud, & Schwarzer, 2002; Schwarzer, Blässler, Kwiatek, Schröder, & Zhang, 1997), which in turn has been identified as an important resource (i.e., protective factor) for children (Masten & Coatsworth, 1998, Rutter, 1987). Further, resilience is not just the absence of negative outcomes. In line with this, Keyfitz, Lumley, Hennig, and Dozois (2013) concluded in their study that low levels of negative schemas are not the crucial factor for resilience. Rather, they emphasize the importance of positive schemas for positive emotional functioning. Furthermore, social cognitive theory postulates a significant regulative function of efficacy beliefs on human agency, which operates within a network of socio-cultural and psychosocial influences (e.g., Bandura, 1977, 1982, 1997).

However, children do not only develop representations about their abilities. Verbalizations and play is also an age-adapted way to gain access to children's developing sense of self. In line with the definition of cognitive schemas by Beck and Dozois (2011) (see section 1.2.1), social cognitive theory postulates that experiences are internalized in mental structures (e.g., interpersonal scripts), which in turn influence later behavior (Bretherton, 1990). The second study in this dissertation (Müller, Perren, & Wustmann Seiler, 2014) is based on research suggesting that characteristics of children's conflict-based narratives

reflect these mental representations (Bretherton & Oppenheim, 2003). However, children's language competence, the development of autobiographic memory and play are requirements for the use of conflict-based narratives as a measurement.

1.2.2 Mental Representations and Conflict-Based Narratives in Preschool Age

1.2.2.1 Children's Language and Autobiographical Memory

Hoff-Ginsberg (1993) described three phases of the transition from communication to language: intentional communication based on gestures, first linguistic expressions, and the significant increase of conversational units from the second year of life on, including a social quality of the communication. Therefore, already at age 3 years, children are able to adapt their language according to the person with whom they are communicating. The emergence of language is highly crucial for the development of autobiographical memory (see also section 1.2.1.1), which in turn leads to the formation of the self (Fivush, Habermas, Waters, & Zaman, 2011). However, the ability to recall past events is just the basis: Relevant for children's development it is the storage, organization, and processing and evaluation of emotions and interactions and thoughts that emerge within one's social and cultural environment. Several researchers (e.g., Emde, 2003; Oppenheim, 2006) emphasized the importance of narratives in the sense of a meaning-making process, providing a sense of self. Stern (1985, 1995) postulated the "narrated self" (i.e., weaving different aspects of the self into a personal story) to emerge when children are about 3 to 4 years old and to be the basis of the individual autobiographic history.

1.2.2.2 Children's Play

The development of children's play behavior occurs in a defined sequence that has been found to be dependent on age but independent of culture (Fein, 1981). The story stem technique is conducted with play figures (in this study we used Lego Duplo figures) and is designed to stimulate children's symbolic or pretend play. This method can be applied with

children from 3 years on. Accordingly, pretend play has its peak with ages 3 to 5 (Singer & Singer, 1992). Symbolic play is characterized by children's "acting as if" behavior (Leslie, 1987).

Bretherton (1984) defined three elements of symbolic play—the actor (the child), the action, and the object—that change with age. Regarding the actor, self-reference expands with including other persons or objects that substitute persons (e.g., puppets). Children's play consists at first of separate actions. Later, the child develops specific schemas of actions resulting in the combination and sequence of actions. With increasing age, children are able to give different meanings to an object (e.g., a cube can be a chair, a stone, or a cake, depending on the content of play) or imagine an object that would be required within the play. These characteristics of symbolic play, but especially the development of schemas and sequence of actions are the basis of the story stem technique.

1.2.2.3 Conflict-Based Narratives: The Story Stem Technique

Producing narratives provides children with a way of "making sense" of experiences in daily life by giving meaning to things, events, and situations and by organizing them (Emde, 2003; Oppenheim, 2006). The development of narrative ability requires substantial cognitive ability, as the structure of narratives reflects cognitive structures or, in other words, mental representations that different researchers have called schemas, internal working models, or interpersonal scripts (e.g., Baldwin, 1992; Bowlby, 1969; Bretherton, 1990). According to attachment theory experiences with important persons are memorized and organized into mental models. Again here, the family takes a prominent role by providing children's most immediate social partners (i.e., the parents) (Bornstein, 2012). These mental representations of relationships prepare the child with a sense of predictability in similar situations (Bowlby, 1973, 1982). Research on story stems deals with the questions as to what patterns of representations are memorized, how they are organized, and by what means they

can be made assessable.

The story stem technique tries to activate these patterns by presenting a conflict, which is supposed to activate the predominant pattern of representations and in turn will have an effect on the child's narrative. Or in the words of Robinson, Hérot, Haynes, and Mantz-Simmons (2000):

> The story stem acts as a catalyst that is meant to provoke in the child a 'psychological impulse' that will reveal the subjective attitudes, feelings and emotions of the child – narrator as well as her ability to organize her feelings into coherent stories and draw from her scripted inner representation of her world, her unique individual experience as well as her cultural and ethnic background. (p. 103)

Here, Robinson et al. are referring to the coherence and content of the narratives (for further details, see the theoretical rationale of Müller, Perren, & Wustmann Seiler, 2014; section 4.2.1).

Additionally, conflict-based narratives were shown to be affected by children's emotion regulation strategies (Clyman, 2003). In terms of emotion regulation, children may avoid or modify negative themes or emerging emotions that are activated by the conflict situation and therefore, for instance, may produce more positive themes in their narratives although negative themes would be expected to be evoked by negative experiences (Aksan & Goldsmith, 2003; Clyman, 2003; Zahn-Waxler, Kochanska, Krupnick, & McKnew, 1990). Emotion regulation strategies cannot only result in narratives that are inconsistent with children's experiences and representations. Clyman (2003) stated that narratives could reflect emotion regulation strategies and mental representations at the same time.

Derived from attachment theory, one of the most commonly used narrative instruments is the MacArthur Story Stem Battery (MSSB) (Bretherton & Oppenheim, 2003). Although the original stories of the battery were not used in this dissertation project, the

newly developed stories (for a description, see section 4.3.2.3) were based on the MSSB. Therefore, this paragraph describes the use and advantages of the MSSB. The MSSB is a series of open-ended social-emotional dilemmas presented to children who are asked to complete them. Because of its nonintrusive conception, the MSSB is supposed to be cognitively and emotionally accessible for young children (Holmberg, Robinson, Corbitt-Price, & Wiener, 2007). The premises of adequately developed linguistic skills and the presence of symbolic play set the lower limit for use of the MSSB at age 3 years (Holmberg et al., 2007). Several standardizations ensure that the narratives can be reliably scored and interpreted: (a) Words and play of the story stems are predetermined in a standardized manual, (b) Also the used material is standardized. The doll figures presented do not represent or copy persons in the child's environment. However, the use of stories related to everyday situations facilitates the children's approach to them (Holmberg et al., 2007; Oppenheim, 2006; Woolgar, 1999), and (c) Standardized "prompts" depending on the child's response allow the examiner to channel the narrative. The interviewer has the possibility to regulate the narrative with these "prompts" (without being suggestive regarding contents, of course). Therefore, although the story stem technique takes advantage of the play behavior common to the children's age (see section 1.2.2.2), it differs from daily play situations due to the standardized procedure.

Research on narratives unifies theories of normative child development and child psychopathology and yields indications concerning prevention and intervention (Oppenheim, 2006). Children's narratives have been shown to provide even diagnostically informative details about children's perspectives, experiences, and emotions in a non-threatening way (e.g., von Klitzing, Stadelmann, & Perren, 2007). The information obtained about children's perspectives and meaning-making processes is clinically and developmentally relevant, whereas these two perspectives are related. Conflict-based narratives provide a possibility to

understand young children's views, thoughts and emotion and to turn maladaptive representations into more adaptive schemas. Conclusions from research on narratives indicate that by helping risk-exposed or traumatized children to develop a meaningful and coherent narrative about the event in question, the children can process the information and cope better (Oppenheim, 2006). Especially for this purpose, the moderating effect of coherence and content of conflict-based narratives is of interest not only theoretically but also clinically.

After having introduced children's self-reports, their mental representations of ability and conflict situations and emphasizing the importance of familial environment, the following paragraph focuses on children's distal environment, which is addressed in study 3 (Wustmann Seiler et al., 2014). More and more children are growing up not only within their family environment; they are also attending center-based childcare from a very early age on. As these children spend a large part of their daily lives in childcare centers, it is necessary to examine the influence of center-based childcare on their social-emotional outcome in addition to the impact of family aspects. Sameroff (2006) stated: "A central requirement is the recognition that there are many contributors [to children's development], in addition to the family, at multiple levels of children's social ecology" (p. 54). Additionally, all data in this dissertation project were collected based on a childcare sample or even within the childcare setting, which makes the inclusion of childcare even more relevant. As the significance of qualitative and quantitative indicators of early center-based childcare for the promotion of resilience and an overview of the current literature is already addressed at length in Wustmann Seiler et al. (2014), the following paragraph will be brief on this issue and refer here exemplarily on two main studies about research of early childhood care. The focus of this paragraph is on the question as to why research on early center-based childcare quality and quantity is relevant to society and children's distant future.

1.3 Children's Distal Environment: Early Center-Based Childcare Experiences

1.3.1 Childcare in Switzerland

The importance of research (and transferring results into practice) on early center-based childcare quality is related to resilience on a social and individual level. Changes in society bring up the need for different forms of childcare; nowadays, both parents have to or want to work, due to economic necessity or to pursue personal goals. According to the most recent report by the Swiss Federal Office for Statistics (BFS) the percentage of mothers that did contribute to household income was more than 80% (BFS, 2008[1]). According to a study (Iten et al., 2005) conducted within National Research Program 52 (NRP 52) of the Swiss National Science Foundation, 41% of households with preschool children made use of formal (childcare centers, day families) or informal (relatives, neighbors, friends) childcare services. The report by the Swiss Federal Statistical Office (BFS, 2008) confirmed that 38% of two-parent households and 54% of single parents with children under age 15 used some form of childcare. If the youngest child in the family is younger than 7 years old, the amount increased to 52% and 70%, respectively. Although informal forms of care (e.g., grandparents) are still more common in Switzerland, the use of complementary childcare services has increased significantly in recent years, and the need for childcare centers is still growing: Based on an extrapolation of the NRP 52 study data, Iten et al. (2005) concluded that there would be the need to create about 50,000 additional childcare places/vacancies to meet the requirements. From 2003 to 2008, 551 childcare centers were established (or existing centers were expanded, respectively), funded by federal finance assistance (BFS, 2008). Based on the

[1] Referring to the last statistical report of the Swiss Federal Statistical Office (BFS). Updated data will be available by midyear of 2014 (information provided by mail from the BFS on January 13, 2014).

situation in Switzerland described just above, Wustmann Seiler et al., 2014 take up childcare centers as another crucial environment that affects children's social-emotional development.

1.3.2 Research on Quality and Quantity of Early Center-Based Childcare

According to Phillipsen, Burchinal, Howes, and Cryer (1997), the quality of center-based childcare can be assessed by process quality and structural characteristics of the childcare centers. Process quality is what the child actually experiences (at least at the time of quality measurement, however). It includes, for example, teachers' behavior towards the child and has been found to have a positive effect on children's social-emotional development. Structural indicators of center-based childcare are for instance child to adult ratio, group size, caregiver formal education, and caregiver specialized training. Their effect on the child was supposed to be mediated by process quality. Additionally, children's social-emotional outcomes were found to be affected by intensity and duration of center-based childcare attendance.

Among the largest and numerously cited investigations is the longitudinal study by the National Institute of Child Health & Human Development (NICHD) Early Child Care Research Network (e.g., NICHD, 2000, 2002, 2003), comprising different risk factors, quality measures, and developmental outcomes. 1'364 families participated at the first measurement when the child was one month old. At first grade, still 1'100 families were in the sample. The results showed a positive effect of intensity of center-based care on children's cognitive outcomes, but the result was depending on children's age (i.e., the effect was not significant for children younger than 2 years of age). On the one hand, duration of nonfamilial care was associated with more behavior problems. On the other hand, quality of nonfamilal care was related to higher rates of social competence. Furthermore, the study found a positive effect of childcare quality on children's cognitive and academic performance.

Also the EPPE study (Effective Provision of Preschool Education) is a larger longitudinal study in Europe about the development of young children that attend extra familial care (Sylva et al., 2003; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004a, 2004b) comprising about 2'800 children in 141 childcare centers (day nurseries, integrated centers, nursery schools, playgroups, etc.). As a control, 300 children who were raised at home participated. The EPPE study found positive and persisting effects of center-based care on children's social and cognitive development. Additionally, children attaining center-based care showed a higher intellectual capacity in the first two years of school. An early beginning of centre-based care (i.e., before the third and even more before the second year of life) showed to lead to more anti-social behavior. However, this effect was neutralized by the provision of high-quality care (in contrast to low-quality care). The intensity of centre-based care showed no significant effects on children's development.

Beyond these two main studies, current literature provides heterogeneous results and conclusions (see also section 5.2.1). Furthermore, Vandell and Wolfe (2000) claimed that those studies that found significant results are reported repeatedly and that interpretations of the findings differ. Systematic research is needed to investigate the determinants for positive *and* negative effects (and potential interactions of both) of early center-based care on children's development.

1.3.3 Long-Term Effects Early Center-Based Childcare Experiences

A few studies on long-term effects have emphasized the importance of good childcare quality. Some researchers concluded that effects of childcare would not persist, mainly because of other experiences that would affect children's lives more or just cover them (e.g., Blau, 1999; Deater-Deckard et al., 1996). However, early intervention projects were shown to have a positive effect on children's IQ scores as well as reading and mathematics skills and were associated with a lower risk of grade retention or assignment to special education (e.g.,

Campbell & Ramey, 1995; Ramey et al., 2000). Positive effects for preschool participants (as compared to control children) were found beyond the children's twentieth year of life. They were more likely to be more highly educated and have higher mean earnings. Additionally, they were less likely to be arrested or in need of public assistance (FPG Child Development Center, 1999; Schweinhart, 2003). Although findings of long-time effects are based mainly on intervention programs, they indicate the relevance of early center-based care. In a non-intervention study by Vandell, Belsky, Burchinal, Steinberg, Vandergrift and NICHD Early Child Care Research Network (2010) higher quality childcare predicted higher cognitive-academic achievement at age 15 and also predicted youth reports of less externalizing behavior. However, some researchers (e.g., Scarr, 1998) concluded that there is little or no long-term effect of childcare quality on child outcomes (for disadvantaged children this may be different, however).

1.3.4 Early Center-Based Childcare Experiences and Resilience

In addition to direct effects, whether short or long term, recent research has also focused on the protective function of high childcare quality (e.g., Hall et al., 2009, 2013). Hall et al. (2013) found protective effects, but they were mainly effects of the global quality of preschool on the cognitive development of young children. For social and behavioral outcomes, the results were less distinct. The large NICHD study (see section 1.3.1) found little evidence of the protective function of high quality center-based childcare on children's developmental outcomes. Considering also other studies, Peisner-Feinberg (2004) concluded that evidence for the protective effect of childcare quality is inconsistent or non-existent.

Since the development of problem behavior and competences is multi-determined, the influence of childcare quality cannot be considered in isolation. Up to now, most studies have included family risks in their analyses, especially regarding the effects of childcare for children in low-income families (e.g., McCartney, Dearing, Taylor, & Bub, 2007; Votruba-

Drzal, Levine Coley, & Chase-Lansdale, 2004). To extend control of other factors that may have an impact on children's competences and problem behavior, we applied a multiple risk approach in line with the cumulative risk model (see section 1.1.2).

Childcare centers are characterized here as children's distal environment. However, more and more children spend a significant amount of time there. This and the "at hand" potential of providing a positive environment for children's development (and especially for children at risk for a maladaptive development) make research on childcare quality and quantity essential with regard to the postulated multi-leveled promotion of resilience.

2 Overview

This section describes the design of the larger intervention study, which was the basis of this dissertation project. Further, a brief comment on the social-emotional measures that we applied is given because these data were used as outcome in all three studies. Lastly, an overview of the methods in the three studies is provided (all methods and theories are described in detail within the corresponding sections of each study, however).

2.1 Design and Samples of the Dissertation Project

The present dissertation project is part of a larger intervention study "Promoting Learning and Resilience in Early Childhood Settings" conducted by the Marie Meierhofer Institut für das Kind (Wustmann & Simoni, 2010). The study was designed with two measurement points that were one year apart (t1 and t2). Children from 24 childcare centers in the German-speaking part of Switzerland took part in the study. Parents were invited to participate in the study and gave their written consent, agreeing to cooperate and giving permission for a child interview. For the present dissertation project, we made a pre-selection including only children that were between 2 and 4 years old when the parent interview took place (at the first measurement [t1] between November 2009 and April 2010). 292 families participated at t1. The sample consisted of 140 girls and 152 boys. Children's mean age was 2.88 years (*SD* = .74). The first measurement included:

- Parent interview and questionnaire about children's risk exposure (developed within the dissertation project), which also assessed information about intensity and duration of childcare attendance (quantity of childcare attendance)
- *Entwicklungstest ET 6-6* [development test 6 months to 6 years] (Petermann, Stein, & Macha, 2006)

At the second measurement [t2] between November 2010 and April 2011, we asked the same families again to participate. There were no parents that opted to participate or did

not want their child to participate again, but—as there is a high fluctuation rate in Swiss child care centers—there was an amount of children that were not in the childcare center anymore and therefore had to be excluded for t2. 231 children participated at the second measurement[2] and provided the sample for the first study. The sample in study 2 consists of 193 children because the MSSB could not be conducted with 10 of the 231 children (for reasons of time limit in the data collection phase). Additionally, 28 narratives of the children were not codable (see section 4.3.2.3). The sample in the third study was reduced to 162 because of the matching with the data of another partial study (quality measurement) of the broader intervention study. The second measurement included:

- The newly developed child interview (*self-perceived ability*; see section 3.3.2)
- The Self-Concept Questionnaire for (Preschool) Children (*Selbstkonzept-Fragebogen für (Vorschul-) Kinder*, SKF) (Engel, Rönnau-Böse, Beuter, Wünsche, & Fröhlich-Gildhoff, 2010).
- The MacArthur Story Stem Battery (MSSB) (Bretherton & Oppenheim, 2003)
- The Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997)
- The General Self-Efficacy Scale (GSE) (Schwarzer & Jerusalem, 1999)

Additionally, process quality was assessed in the context of the other partial study (September - December, 2010) and included the German versions of:

- The Infant/Toddler Environment Rating Scale Revised (ITERS-R, 0-3 years) (Harms, Cryer, & Clifford, 2003; Tietze, Bolz, Grenner, Schlecht, & Wellner, 2005)
- The Early Childhood Environment Rating Scale – Revised Edition (ECERS-R, 3-6 years) (Harms, Clifford, & Cryer, 1998; Tietze, Schuster, Grenner, & Rossbach, 2007)

[2] Descriptive statistics about the sub-samples are reported in detail in the correspondent sections of each study.

- The Early Childhood Environment Rating Scale – Additional aspects (ECERS-Z, 3-6 years) (Rossbach & Tietze, in prep.).

2.2 Assessment of Social-Emotional Outcomes

Masten (2001) stated that resilient children attain typical or normal outcomes in their social-emotional development. Influences on children's social-emotional development are multifaceted, and their interplay is not yet clear. However, research on the development of young children is important, as it may be crucial for all that follows in their lives. Early emerging maladjustment often persists in adolescence and adulthood, which has been found especially for children with co-occurring problems (e.g., Briggs-Gowan et al., 2006). Additionally, the considerable number of children with social-emotional and behavior problems makes identification of these problems even more important (Carter, Briggs-Gowan, & Ornstein Davis, 2004). As the occurrence of symptoms is influenced by multiple factors, also the reasons for persistence of internalizing and externalizing are multi-determined. Identifying and strengthening children's resources may therefore be a possibility of primary intervention and may be necessary for meaningful implementation of intervention.

A commonly used instrument to assess the status of children's social-emotional development at a certain point is the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997), which is a brief behavioral screening questionnaire with well-established psychometric properties for young children (Goodman, 2001). The SDQ data serve as a basing point of outcome measurement in all three studies in this dissertation. Additionally, the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1999) was used to assess self-efficacy in Wustmann Seiler et al., 2014. Numerous studies provide good psychometric properties for the scale (e.g., Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). The General Self-Efficacy Scale was primarily chosen to consider the salutogenesis approach (in contrast to pathogenesis) (Antonovsky, 1997). Following a multi-informant approach,

teachers as well as parents completed these two questionnaires. However, one major aim this dissertation project was to include first and foremost children's view and reports.

2.3 Overview of the Studies

The present dissertation includes a total of three studies. The content of the manuscripts is reproduced in the last version (i.e., in the form in which they were submitted to the respective journals). Layout was adapted to the overall layout of the dissertation. Analyses of the first two studies were conducted using AMOS 19 (Arbuckle, 1995-2010). Additionally, the first study applied a person-oriented approach, which was analyzed with configural frequency analysis (Krauth & Lienert, 1973). For the third study MPLUS 7.1 (Muthén & Muthén, 1998-2012) was used.

The first study (Müller, Wustmann Seiler, et al., 2014) in this dissertation aimed to examine, develop, and evaluate a self-report instrument for preschoolers assessing self-perceived ability. The theoretical background was based on and introduces Nicholls' (1978, 1980, 1984; Nicholls & Miller, 1983) theory on the relation between young children's self-perceived ability and their perception of task difficulty. Additionally, motivation was added based on the literature. Person- and variable-oriented approaches were applied for the analyses of the factor structure and the initial validation of the self-report instrument. On a person-oriented level, a configural frequency analysis was computed (as explained in section 3.4.2.1). The variable-oriented approach included the overall factorial structure of children's reports, the analysis of self-perceived ability as a potential mediator and the association with related constructs based on children's and adult's reports. The newly developed structured interview aimed to take a resource-oriented—in contrast to a deficit-oriented—perspective and to consider children's self-reported perceptions.

The second study (Müller, Perren, & Wustmann Seiler, 2014) was also based on children's self-reports. Coherence and content of children's conflict-based narratives were

assessed using story stems based on the MSSB (Bretherton & Oppenheim, 2003). Based on the cumulative risk approach (see section 1.1.2), a family risk index was computed and tested for direct effects on coherence and content themes and children's maladjustment. As described above, family experiences are supposed to be internalized as mental representations. However, the newly developed stories did not specifically elicit family themes or conflicts. The suggestion was that conflict-based narratives based reflect general mental representations about dealing with conflict situations that are supposed to develop within the family context.

As the concept of mental representation is based on the assumption of internalized experiences, which in turn have an impact on children's behavior, mediation effects of coherence and content themes were tested. As described, there are various models that explain the relation of risk and protective factors. However, the direct effect model and the moderation model are widely used in resilience research. Therefore, coherence and content of conflict-based narratives were tested for direct and moderation effects on children's maladjustment.

The third study (Wustmann Seiler et al., 2014) does not include children's self-reports. However, it addresses an important aspect of children's everyday environment. The aim was to investigate the direct effects of multiple risks (biological and psychosocial) as well as qualitative and quantitative indicators of early center-based care on children's problem behavior and competences. Additionally, there is little research about moderation effects of indicators of center-based care on the negative effect of multiple risks on children's social-emotional outcomes. In terms of the protective potential of high childcare quality, moderation analyses were indicated here as well. As described, there are almost innumerable possibilities to measure childcare quality. Process quality, as the factor that has the most directly influence on children, was included unquestionably. Further, we decided to integrate

as quantitative measures those factors that are related to the children on an individual level (duration and intensity of childcare attendance). Other than structural characteristics, such as child to adult ratio or the group size, the duration and intensity of care in the institution are measures that are retrieved from every child's individual history. Therefore, this is line with the overall guiding aim within this dissertation of focusing on children.

2.4 Summary

Children's perceptions—be they self-perceptions or representations of events, situations, and relationships—effects of different risk indexes, and childcare quality as another crucial environment factor are examined with a view to children's social-emotional outcomes at the time of measurement. The three studies of this dissertation discuss different aspects within children's social-emotional development, which is as multifaceted as every individual is. Each study contributes other aspects of the socio-ecological model with regard to resilience (which is discussed in section 6). Of course, the reported results provide a snapshot in children's developmental journey, but they contribute interesting findings regarding children's adjustment and resilience.

3 Study 1: Young Children's Self-Perceived Ability: Development, Factor Structure and Initial Validation of a Self-Report Instrument for Preschoolers[3]

3.1 Abstract

We developed and evaluated a self-report instrument for preschoolers assessing self-perceived ability, task difficulty, and motivation. 231 3-to 5-year-old children (M = 3.84 years, SD = .49, 112 girls, 119 boys), participated in the interview, and reported also on their self-concept. Parents and teachers reported on children's symptoms. In a first step we used a person- and a variable-oriented approach to assess associations between self-perceived ability, estimated task difficulty and motivation. In a second step, we aimed to generate evidence for our construct of self-perceived ability based on relationships between the test scores and other measures that are theoretically assumed to be related to self-perceived ability. Results confirm the theory-based relation between self-perceived ability, task difficulty, and motivation, and indicate construct validity. Self-perceived ability proved to mediate the association between task difficulty and motivation and predicted children's task mastery and self-concept. However, children's self-reports were not associated with adult reported symptoms. The findings extend the discussion on the validity, reliability, and accuracy of self-reports in preschoolers. Further studies need to address the criterion-related validity of the interpretation of the newly developed instrument.

Keywords: self-perceived ability, motivation, task difficulty, preschool, self-report, validation

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[3] Eva Müller, Corina Wustmann Seiler, Sonja Perren, & Heidi Simoni (2014). Paper under review in the *Journal of Psychopathology and Behavioral Assessment*.

3.2 Introduction

Children's perceptions of their abilities are of great interest in developmental research. As Jacobs, Lanza, Osgood, Eccles, and Wigfield (2002) summarized, self-perception of ability is related to self-efficacy development, achievement motivation, and actual achievement, and thus can have consequences for children's immediate and distant future and their development of mental health. Up to now, no instrument has been available that can reliably and validly assess self-perceived ability in children as young as 3 years old. Here, we describe our development and evaluation of an age-appropriate self-report instrument measuring self-perceived ability, task difficulty, and motivation in children ranging in age from 3 to 5 years.

3.2.1 Self-Perceived Ability in the Course of Childhood

Research on people's perception of their own ability is conducted in different fields and areas (e.g., motivation theories, self-concept, self-efficacy). The conceptualization of self-perceived ability not only depends on the theoretical framework but is also related to children's development. Referring to this, Nicholls (1984) brought up the concept of ego and task involvement. Task involvement is a less differentiated, self-referenced state in which perceived level of mastery, comprehension, learning, and especially effort determine what a person defines as their ability. The point of comparison is one's former performance, which requires only a limited social or external perspective on the self. Expectation of failure, which implies low ability, generates a high task difficulty valuation. More differentiated is the conception called ego involvement. People appraise their ability as high when it is higher than the ability shown by a reference group or person. As the conception of ability changes with age, task involvement refers to the preoperational child and ego involvement develops later (Nicholls, 1978).

Another characteristic of self-perceived ability in early childhood is the assumed

tendency for overestimation in children's perceptions of their ability, with the perceptions becoming less positive with age (e.g., Eccles, Wigfield, Harold, & Blumfeld, 1993; Jacobs et al. 2002). However, Holub (2005) noted that the presumption of children's overestimation is based mainly on anecdotal evidence and that the empirical database regarding this positive overrating is rather poor. Nevertheless, because previous research found that children's objective ability is predicted better by adults' reports than by children's self-reports (Gullo & Ambrose, 1987; Stipek, 1981), adults' reports have been the main source of information about children's abilities up to now (Holub, 2005).

3.2.2 Self-Perceived Ability in Relation to Perception of Task Difficulty

Nicholls and Miller (1983) proposed three levels of difficulty conceptions that are closely related to the perception of ability. At the first level, termed egocentric difficulty, self-perceived ability and task difficulty are closely associated. Children rate task difficulty based on their perception of their own ability to succeed on the task ("If I can't solve it, it is difficult"—and vice versa). At the second level, called objective difficulty, children assess task difficulty on the basis of objective task attributes. As a result, they are able to rate tasks on a continuum ranging from more difficult to less difficult, although difficulty and ability estimations are still correlated at this level. Normative difficulty is the third and highest level. Task rating depends on comparison of one's own ability with that of a reference group. On this level, children can distinctly differentiate between ability and difficulty. As there is a sequential development from the egocentric to the normative level, preschool children are still on the egocentric level and move to the normative level when they are about 6 or 7 years (Nicholls, 1978, 1980; Shaklee, 1976).

3.2.3 Motivation as an Outcome of Self-Perceived Ability and Task Difficulty

Children's self-perceived competency has been found to be crucial for the development of their motivation (Madigan, Winsler, Maradiaga, & Grubba, 2002; Meece,

Blumenfeld, & Hoyle, 1988). Furthermore, task persistence and engagement as aspects of motivation were found to be higher for children with high competence beliefs (Bandura, 1997; Gilmore, Cuskelly, & Purdie, 2003; Harter, 1978). Other theories (e.g., attribution theory, expectancy value theories) identified a person's perception of competence and perception of task difficulty as crucial for the accomplishment of their activities (Eccles & Wigfield, 2002; Weiner, 1985). Moreover, Schunk (1991) recommended using motivation as an outcome variable to report the predictive validity of efficacy ratings.

In sum, previous research identified self-perceived ability as the source of estimations of task difficulty (negative relation) for preschoolers and of motivation (positive relation) in general. Motivation is defined here as the outcome of the inferential process that combines difficulty of a given task and a child's own ability to succeed in it.

3.2.4 Self-Perceived Ability: Differences and Relations to Other Constructs

3.2.4.1 Self-Concept

As mentioned above, the concept of self-perceived ability is used in several fields of research. Although they are not identical, self-perceived ability and self-concept are often used synonymously (e.g., Archambault, Eccles, & Vida, 2010; Eccles et al., 1993). As self-concept is said to be a higher-level construct including other aspects of the self (Schunk, 1991), high self-perceived ability is supposed to be positively related to positive aspects of children's self-concept and inversely related to negative aspects like expectation of failure (Nicholls, 1984).

3.2.4.2 Adult Reported Symptoms

Several studies examining ability beliefs emphasized the negative association between self-perception of one's own capabilities and internalizing problems (e.g., Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Measelle, Ablow, Cowan, & Cowan, 1998). Within most of the cognitive models of depression (e.g., Beck, 1963, 1972), self-perceived

incompetence is supposed to be crucial for the development of depressive symptoms. Cole, Jacquez, and Maschman (2001) showed that low levels of self-perceived competences in multiple domains proximally predicted depression. Hoffman, Cole, Martin, Tram, and Seroczynski (2000) found a predictive role of children's underestimation of their abilities (relative to the appraisals of significant others) for depressive symptoms. McCauley Ohannessian, Lerner, Lerner, and von Eye (1999) reported significant associations between higher levels of competence beliefs and lower depression and anxiety scores.

It is generally assumed that internalizing problems often co-occur with externalizing problems. Indeed, research confirmed these relations. Polier, Vloet, Herpertz-Dahlmann, Laurens, and Hodgins (2012) reported co-occurring conduct problems and internalizing problems of children in a community sample. Goodman (2001) found an overlap between scales measuring internalizing and externalizing problems. Due to the strong and robust association between externalizing and internalizing problems, it can be assumed that maladjustment is negatively related to self-perceived ability. An association between externalizing problems and low levels of self-perceived ability can also be suggested according to frustration-aggression hypothesis (Berkowitz, 1989); the feeling of inability may lead to the feeling and perception of not being able to control the environment and this in turn would lead to an aversive frustration and subsequent aggressive behavior. Han et al. (2001) showed that beliefs about control and competence were specifically related to internalizing and externalizing psychopathology. However, there is also literature reporting "positive illusions" in children with attention deficit hyperactivity disorder (ADHD), which can be seen as another form of conduct problems. Hoza, Pelham, Dobbs, Owens, and Pillow (2002) found that an overestimation of aggressive and low-achieving ADHD boys regarding their competence. This bias mostly showed in the domains of the highest impairment. Han et al. (2001) proposed that this "positive bias" accounts for children with "pure" externalizing

problems and that children with comorbid internalizing symptoms may have a higher level of introspection and therefore are aware of their deficits in behavioral control and competence. However, the co-occurrence of emotional and conduct problems indicates that high perceived ability leads to lower levels of emotional problems and lower levels of conduct problems—keeping in mind that there may be a reversed relationship for conduct problems due to a positive illusion bias.

3.2.5 Research Questions and Hypotheses

In the current study, we developed an instrument to measure preschool children's self-perceived ability in relation to estimated task difficulty and motivation. To test the reliability of the newly developed instrument and the validity of its derived scores, we used different methodological approaches. In a first step we both used a person- and a variable-oriented approach to assess associations between self-perceived ability, estimated task difficulty and motivation. We hypothesized that children's perceived ability and their perception of task difficulty are significantly associated, and that motivation emerges from a combination of both. To test this assumption we first used a person-oriented approach. Underlying is the person-oriented theory (e.g., Bergman, von Eye, & Magnusson, 2006)—in contrast to the commonly used variable-oriented approach. Person-oriented analyses imply that the structure of, for instance, behavior is not universal but specific to (groups of) individuals. Configural frequency analysis (Krauth & Lienert, 1973) provides the possibility to examine individual cells or groups of cells. Analysis is aimed at subgroups of individuals that differ from expectations (von Eye, Mun, & Bogat, 2008). Therefore, we expected that certain answer patterns—derived from the theory—are more frequently observed than combinations, which are in contrast to theoretical assumptions. Second, we used a variable-oriented approach to analyze the factorial structure of self-perceived ability, task difficulty, and motivation and the overall factorial structure of the three subscales included in one model using confirmatory

factor analyses. We expected that children's self-perceived ability is positively related to motivation and negatively related to task difficulty. Additionally, according to different studies (e.g., Madigan et al., 2002; Nicholls & Miller, 1983) self-perceived ability (compared to perception of task difficulty and motivation) is the most important perception in evaluation a demanding situation. Therefore, we suggested that self-perceived ability mediates the effect of task difficulty on motivation.

In a second step, we aimed to generate evidence for our construct of self-perceived ability based on relationships between the test scores and other measures that are theoretically assumed to be related to self-perceived ability. First, we investigated the accuracy of children's self-perceived ability. We hypothesized that self-perceived ability is related to children's success in the accomplishment of the real tasks (task mastery), because children are familiar with the contents of the tasks from their everyday life. Second, we aimed to investigate associations between self-perceived ability and children's global self-concept. We hypothesized that high levels of self-perceived ability are positively associated with children's positive self-concept and negatively associated with anxiousness/anticipation of failure. Third, we investigated associations between children's self-perceptions of their ability and adults' ratings of their symptoms. We hypothesized that self-perceived ability is related to lower levels of emotional symptoms and conduct problems reported by parents and teachers.

3.3 Method

3.3.1 Participants

The present study is part of a larger intervention study on childcare quality (Wustmann & Simoni, 2010). Children from 24 childcare centers in the German-speaking part of Switzerland took part in the study. Parents were invited to participate in the study and gave their written consent, agreeing to cooperate and giving permission for a child interview

and a questionnaire (which was also provided to the child's teacher). The interview was conducted with 231 children, 112 girls and 119 boys. The children's mean age was 3.84 years (*SD* = .49) and ranged from 2.91 to 5.21 years. The participating families were predominantly upper-middle-class residents and from better educated social stratum, with 90.8% of Swiss families and 9.2% of other ethnicities, mainly European. In 81.4% of the families, the language spoken most often was German; 3.5% spoke German and one other language, and 14.3% did not speak German at home. The return rate of the questionnaires was 85.3% for parents and 99.6% for teachers.

3.3.2 The Child Interview

3.3.2.1 Development of the Child Interview

Several studies (e.g., Marsh et al., 2002; Measelle et al., 1998) found that young children have more differentiated concepts of themselves than previously thought. However, little is known empirically about children as young as 3 years old and about the coherence of self-perceived ability with self-reports of task difficulty and motivation and the reliability and validity of these self-reports.

To assess children's self-perceived ability and its relation to estimated task difficulty and corresponding motivation, we developed a standardized task-oriented self-report instrument, which takes the form of an interview. According to Sessa, Avenevoli, Steinberg, and Morris (2001) validity, stability, and internal consistency of preschool children's self-estimations depend not only on age but also on appropriately adapting the measurement instruments employed to children's (age-related) abilities. The interview originally consisted of six tasks, including motor, linguistic, cognitive, and social tasks. For reasons of content, we decided to eliminate the social task. The five remaining tasks were based on concrete and playful actions adapted to the children's developmental stage. The children report perceived ability, perceived task difficulty, and motivation for each task.

Generating the tasks proceeded in three phases. Based on the literature and knowledge of developmental psychology, we constructed a first draft. The tasks were meant to be challenging but not over-demanding. Second, several experts on the topic reviewed the concept. Based on their recommendations, we revised the interview. Third, the revised version was tested with children of different age groups with a view to applicability, feasibility, and duration. Based on this, six university students (in psychology or educational science) participated in two training sessions for conducting the child interview and each trainee conducted at least two practice interviews.

3.3.2.2 Structure of the Interview

Considering the age range of the children, the tasks are age-adapted in steps of six months, maintaining the structure of the child interview. Each age version consists of five tasks (as described in Appendices A and B). The composition of the different tasks is equivalent, containing the children's estimation of (a) task difficulty (e.g., "Do you think it's difficult to build a high tower with these blocks?"), (b) the children's own ability to succeed on the task (e.g., "How good do you think you are you at building a tower with these blocks?"), and (c) their motivation to carry out the task (e.g., "How much would you enjoy doing this now?"). The children's rating was carried out in two steps (following Marsh et al., 2002). First, the children answered simply "yes" or "no" (e.g., "yes, the task is difficult" or "no, the task is not difficult"). Based on that initial answer, the interviewer provided the two correspondent responses of a 4-point scale (e.g., very difficult, a bit difficult, a bit easy, very easy) that were consistent with the first answer. Thus, if the child initially responded "yes, the task is difficult," the interviewer then asked the child if he or she meant "very difficult" or "a bit difficult." If the child's first response was "no, the task isn't difficult," the interviewer asked the child if he or she meant "very easy" or "a bit easy." This procedure was supposed to make the rating less complicated, especially for younger children.

The children had the option of giving their answers verbally or nonverbally. For the nonverbal rating, the interviewer presented blocks of different sizes that the child could point at. Pointing at the bigger block always meant the most extreme value (e.g., "very difficult," "very easy," "very good," etc.). The smaller block was defined as "a bit difficult," "a bit easy," "a bit good," etc. This procedure proved to be helpful particularly for very young and very shy children.

3.3.3 Procedure

The child interview was conducted in an individual setting in a separate room at the childcare center. The interviewer explained to the child that they would play together and that she would ask him/her some questions about what he/she likes to do and what he/she is good at. After illustrating the use of the blocks with a sample task, the tasks were administered in a given order. After rating difficulty, ability, and motivation of a task, the child was allowed to perform it. For each task, the interviewer had instructions concerning how much help she was allowed to provide. The child's task mastery (with or without help) or failure was noted. On average, the interview took about 30 minutes to complete. Most of the interviews could be completely accomplished at the first visit. Ten interviews had to be repeated because of concentration or motivation loss during the first interview.

3.3.4 Additional Measures and Preliminary Data Analyses

3.3.4.1 Assessment of Children's Real Task Mastery

We included the effective mastery of the tasks in our analyses. Children's task mastery was subdivided into: 1 = The child could not/did not want to solve the task, 2 = The child solved the task with help, 3 = The child solved the task alone. The measurement model showed that one additional task (over challenge task) had to be eliminated for this specific analysis because of a low factor loading (< .30). For confirmatory factor analysis we used to following cut offs: χ^2/df (≤ 3.00), RMSEA (root mean square error of approximation, ≤ .05),

CFI (comparative fit index, ≥ .95), and PCLOSE (probability of close fit, ≥ .05). Analysis of the model revealed sufficient fit indices, χ^2/df < 3.00, p > .05, CFI = > .95, RMSEA < .05, PCLOSE > .05 (Brown & Cudeck, 1993; Hooper, Coughlan, & Mullen, 2008; Hu & Bentler; Kenny, 2005).[4]

3.3.4.2 Assessment of Children's Self-Concept by Self-Report

Self-concept was chosen as an additional self-report measurement to assess validity—in terms of *evidence based on relationships* (between the test scores and other variables) (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999). Children's self-concept was assessed using items from the Self-Concept Questionnaire for (Preschool) Children (*Selbstkonzept-Fragebogen für (Vorschul-) Kinder*, SKF) (Engel et al., 2010). Two scales were taken from the SKF: (a) positive self-concept (e.g., "Are you courageous?"), and (b) anxiousness/anticipation of failure (e.g., "Do you sometimes think that you are stupid?"). The procedure was identical to the one used to assess self-perceived ability, task difficulty, and motivation.

Confirmatory factor analyses were conducted to establish a common latent factor underlying the items of the preexisting scales of the questionnaire. The measurement model for the positive self-concept (M = 3.35, SD = .45) showed good fit indices, $\chi^2[61] = 77.03$, p = .08, CFI = .97, RMSEA = .03, PCLOSE = .89. One of the original fourteen items had to be removed because of the insufficient factor loading (< .30). The scale required four error covariances, which are comprehensible by the content of the affected items. The scale anxiousness/anticipation of failure (M = 2.38, SD = .65) showed a good fit of the measurement model, $\chi^2[23]= 36.44$, p = .04, CFI = .96, RMSEA = .05, PCLOSE = .46, and therefore all nine items of the original scale were maintained as all factor loadings were

[4] As a less stringent criterion .08 is accepted for RMSEA and .90 for CFI.

above the limit of .30. There were four error covariances as well.

All children's data were examined for interviewer and setting effects. None of the analyses proved significant, suggesting that individual differences in children's responses were not attributable to differences in the interviewers or the childcare centers.

3.3.4.3 Assessment of Children's Symptoms by Adult Informants

Emotional (e.g., "often complains of headaches, stomachaches, or sickness") and conduct problems (e.g., "often fights with other children or bullies them") were reported by teachers and parents completing the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997), which is a widely used, brief behavioral screening questionnaire with well-established psychometric properties for young children (Goodman, 2001). Responses on the SDQ were scored on a 3-point Likert scale ranging from 1 (not true) to 3 (certainly true), resulting in a mean score for the analyses. In accordance with the age range of this sample, we used the version for 3-4 year olds.

Confirmatory factor analysis for conduct problems contained all five items of parents (M = 1.50, SD = .38) and teacher reports (M = 1.43, SD = .41), separately loading on a common factor. The model fitted the data well, $\chi^2[31] = 51.12$, p = .01, CFI = .96, RMSEA = .05, PCLOSE = .39. The latent factors correlate significantly, r = .23, p = .02. There were three error covariances between four items of the teacher report and two items of the parent report, which might be due to their similar meaning.

The latent factors of emotional problems consisted of four SDQ items for parents (M = 1.27, SD = .31) and teachers (M = 1.29, SD = .41) because one item ("often complains of headaches, stomach-aches or sickness") had to be eliminated due to the low factor loading (< .30). Fit indices were good, $\chi^2[17]= 27.35$, p = .05, CFI = .97, RMSEA = .05, PCLOSE = .43. Both scales required error covariances, indicating their intersecting meaning. The two latent factors of parent and teacher reports were not significantly associated, r = .24, p = .06.

3.4 Results

3.4.1 Descriptive Results and Age and Gender Differences

Table 1 shows all means and standard deviations of the three subscales for the total sample and the age groups of three and four year olds for an overview. The three subscales were estimated on a scale ranging from 1 (low parameter value) to 4 (high parameter value) as described in the method section. Therefore, the means of self-perceived ability and motivation were upper average, reports of task difficulty were slightly lower.

We computed ANOVAs to test age and sex differences in self-perceived ability, task difficulty, and motivation. The results showed a significant effect of sex on children's self-perceived ability, $F(1,226) = 4{,}96$, $p = .03$, with girls, $M = 2.98$, $SD = .67$, rating their abilities lower than boys, $M = 3.14$, $SD = .61$. There were no other significant age or sex differences. As this was not the focus of this study, we did not include age and sex in further analyses.

[Table 1 near here]

3.4.2 Associations between Items and Scales of the Newly Developed Instrument

3.4.2.1 Person-Oriented Analysis of Children's Task Related Response Patterns

To test the theoretically expected relation between self-perceived ability, task difficulty, and motivation, we used configural frequency analysis. Within this method, types are characterized as observed cell frequencies of combinations occurring more often than expected under the null hypothesis of absolute independency (Krauth & Lienert, 1973; von Eye et al., 2008). Frequent combinations of attributes within a population indicate the presence of a type, showing that these attributes are not independent. Antitypes, in contrast, occur less frequently than expected by chance (von Eye et al., 2008).

This method was used with the combination of children's estimations in the three dimensions task difficulty, self-perceived ability, and motivation. The possible configurations

that result from this combination (with 1 = low parameter value, and 2 = high parameter value) are the following types: (a) task difficulty low, perceived ability low, motivation low = 111, (b) task difficulty low, perceived ability high, motivation high = 122, (c) task difficulty high, perceived ability low, motivation low = 211, (d) task difficulty high, perceived ability high, motivation high = 222, and antitypes: (e) task difficulty low, perceived ability low, motivation high = 112, (f) task difficulty low, perceived ability high, motivation low = 121, (g) task difficulty high, perceived ability low, motivation high = 212, (h) task difficulty high, perceived ability high, motivation low = 221. The classification of the configurations 122 and 211 as types is derived from Nicholls' theory regarding the relation between self-perceived ability and task difficulty for children on the egocentric level with motivation as their outcome (Nicholls, 1978; Nicholls & Miller, 1983; Schunk, 1991). Additionally, we also classified 222 and 111 as types, because children with high perceived ability may perceive a difficult task as a challenge and will therefore be highly motivated (222). Inversely, children with low perceived ability may also be unmotivated even for easy tasks (111). These classifications can be seen in relation to the dynamic dependence of ability beliefs and task difficulty (and, as a result, motivation). The configurations classified as antitypes do not fit these theory-driven assumptions and should therefore occur less. For the calculations, the original 4-point response scale was reduced to a 2-point scale (low vs. high parameter value) with regard to the low cell frequency resulting from a 4x4 combination.

Table 2 shows the frequencies and the resulting classifications of all possible configurations. The children's statements accorded with the theory-based configurations as types or antitypes: The types occurred more often than would be expected by chance, and the antitypes are more rare than expected. Most results are significant or confirmed the hypothesized configurations at least by trend. In this context, the classification "neutral" is not a contradiction to the hypothesized grouping. "Neutral" just indicates that the

combination does not occur more or less than expected. Additionally, configurations 112 and 222 were the most frequently observed. In sum, the analysis indicated that children show a differentiated response pattern, which is in accordance with our theoretical assumptions.

[Table 2 near here]

3.4.2.2 Variable-Oriented Analyses of the Overall Factorial Structure

The following analyses were conducted using AMOS 19 (Arbuckle, 1995-2010) and missing data were estimated using full information maximum likelihood (FIML) (Kline, 2005). We first did confirmatory factor analyses to test for factorial structure of the subscales. The measurement models show the relation between the observed variables and their hypothesized common factor. Each of the three factors is supposed to be represented by five items (five tasks, each with a question about self-perceived ability, task difficulty and motivation). Accuracy of measurement models was acceptable for self-perceived ability, task difficulty, and motivation, $\chi^2/df < 3.00$, $p > .05$, CFI > .95, RMSEA < .08, PCLOSE > .07

3.4.2.2.1 Overall Factorial Structure

To investigate the overall factorial structure, confirmatory factor analysis was computed to reveal the relation between the latent variables (see Figure 1). The five items of the measurement models were integrated in the overall model. To control for the impact of the different task contents, we included method factors. Additionally, the error correlations of the measurement models were maintained. These modifications considerably improved model fit, which was now considered to be an acceptable fit, $\chi^2[71] = 113.25$, $p = .00$, CFI = .96, RMSEA = .05, PCLOSE = .45. Figure 1 shows the standardized estimates. The loadings of the indicator variables on their common factor ranged between .34 and .70 and explained variance from 31% to 100%, with the lower limit caused mostly by the lower loadings of the first task, which we maintained because of the sufficient amount of explained variance.

[Figure 1 near here]

3.4.2.2.2 Mediation Effect of Self-Perceived Ability

To reveal the crucial role of self-perceived ability within this triadic relationship, we analyzed the hypothesized mediating effect of self-perceived ability. For mediation analysis we first had to replace the missing values. Following Cheung and Lau (2008), we used bootstrapping to test the significance of the direct and indirect effects of the models with a confidence interval of 95% and standardized estimates.

Figure 1 shows, that estimated task difficulty was negatively associated with self-perceived ability, r = -.61, p = .01, and motivation, r = -.47, p = .01, whereas self-perceived ability and motivation were positively associated, r = .76, p = .00, which are premises for mediation. There was a significant direct effect of task difficulty on self-perceived ability, r = -.62, p = .00, and of self-perceived ability on motivation, r = .74, p = .00. The mediation was confirmed by the significant indirect effect of task difficulty on motivation, r = -.46, p = .00. The mediation was total, as the direct effect of task difficulty on motivation lacked significance, r = -.01, p = .99.

3.4.3 Associations Between the Test Scores and Selected Outcome Variables

3.4.3.1 Associations with Real Task Mastery

We computed a model including the three subscales (self-perceived ability, task difficulty, motivation) and real task mastery (however, only for four tasks as described in the method section). Confirmatory factor analysis showed a good fit of the model, $\chi^2[82]$ = 114.61, p = .01, CFI = .96, RMSEA = .04, PCLOSE = .78. Results showed that in a model with all three subscales, task mastery was significantly related with self-perceived ability, r = .64, p = .00, and motivation, r = .90, p = .00, whereas task difficulty was not, r = -.28, p = .08.

3.4.3.2 Associations with Children's Self-Concept

We compared children's self-perceived ability, task difficulty, and motivation with children's self-concept, which is supposed to be a higher-level construct of self-perception. We computed confirmatory factor analyses to test for the association of the self-concept scales with self-perceived ability, task difficulty and motivation. The fit of the model including the positive self-concept scale was good, $\chi^2[351] = 478.55$, $p = .00$, CFI = .92, RMSEA = .04, PCLOSE = .98. The assumption that self-perceived ability and a positive self concept are positively related was confirmed, $r = .38$, $p = .00$. Additionally, task difficulty, $r = -.23$, $p = .04$, and motivation, $r = .38$, $p = .00$, were associated with a positive self-concept. The anxiousness/anticipation of failure scale was not correlated with self-perceived ability, $r = -.11$, $p = .26$, task difficulty, $r = .15$, $p = .17$, or motivation, $r = .06$, $p = .54$. Model fit, again, was good, $\chi^2[226] = 295.29$, $p = .00$, CFI = .95, RMSEA = .04, PCLOSE = .98.

3.4.3.3 Associations with Adult Reported Symptoms

We conducted additional models relating adult reports of children's symptoms with their self-perceived ability, task difficulty, and motivation. Fit indices were good for the model including teacher and parent reported emotional problems, $\chi^2[202] = 256.70$, $p = .01$, CFI = .96, RMSEA = .03, PCLOSE = .99, and conduct problems, $\chi^2[246] = 360.29$, $p = .00$, CFI = .93, RMSEA = .05, PCLOSE = .80. However, there was no significant effect between conduct problems reported by teachers or parents and children's data. Emotional problems reported by parents did not correlate with children's estimations of self-perceived ability, task difficulty or motivation. Teachers' reports on emotional problems were associated with children's reports regarding their motivation, $r = .21$, $p = .02$. However, this relation is positive, which was contrary to our expectations. In sum, the hypothesized negative relation between emotional and conduct problems on children's self-perceived ability could not be confirmed.

3.5 Discussion

The aim of this study was to examine the factor structure and to do the initial validation of a newly developed self-report instrument for preschoolers. The study showed that the assessment of task-related ability in children 3-5 years of age is feasible and that it yields meaningful data. Children were able to differentiate between the subscales. The children's response patterns, the factorial structure, and in parts the association with related constructs indicate the instrument's construct validity.

3.5.1 Children's Self-Perceived Ability in Relation to Estimated Task Difficulty and Motivation

Our results provide an approximation to construct validity. First, the outcome of the configural frequency analysis suggests that the utilized tasks and items conform to the theories on a within-person level. Types and antitypes deriving from the analysis confirmed the theory-based configurations, mainly significantly but at the least by trend. Additionally, the frequencies showed that most children's self-reports reflected types rather than antitypes. Most children reported their abilities and motivation as high; differences occur mainly regarding difficulty (configurations 222 and 122). On the one hand and viewed in isolation, this could be interpreted as children's typical overestimation of their own ability as postulated in literature (e.g., Harter, 1998) and the neglect of considering task difficulty (Nicholls & Miller, 1983). But on the other hand, the overall patterns retrieved from configural frequency analysis indicate that children actually do also take task difficulty into account. The frequencies showed that children more often produced configurations that conform to theories, which is an additional indicator of the validity of children's self-reports. The most frequent configuration, 122, parallels the proposed associations of the three dimensions based on Nicholls' (1978, 1980; Nicholls & Miller, 1983) theory.

Second, the measurement models of self-perceived ability, task difficulty, and

motivation were computed, and confirmed that the applied items all load on their theoretically assumed latent factor. With this 5-task solution, also the overall confirmatory factor analysis model fits the data satisfyingly. This confirms Nicholls' (1978, 1980) hypothesis on the polarity (negative or positive) of correlations: The more demanding a task seems to children, the lower the children's estimations of their ability and their motivation to solve it. Motivation and self-perceived ability were positively related. The hypothesized mediating effect of self-perceived ability was tested following Cheung and Lau (2008). The resulting full mediation of the relationship between task difficulty and motivation by self-perceived ability confirmed the dominating role of this factor in this triad and thus identified self-perceived ability as crucial.

Although the analysis of gender and age differences was not the focus of this study, the resulting lower self-perceived ability for girls should be mentioned. Boys showed to have more positive competence beliefs than girls for the domain of physical activity, which was however closer related to the tasks in the newly developed child interview than the domains that would elicit positive self-reports of girls (e.g., reading and music activities) (Eccles et al., 1993). However, the lower self-perceived ability in girls' reports could also been caused by their higher tendency of social inhibition or as a result socialization (e.g., that girls are probably rather raised to be decent than boys) (Keenan & Shaw, 1997).

3.5.2 Associations Between Self-Perceived Ability and Selected Outcome Measures

Studies in present literature report a lack of accordance between children's estimations regarding their self-perceived ability and their effective task mastery. Children are supposed to overestimate their ability (e.g., Eccles et al., 1993; Jacobs et al. 2002). In general, parents' and teachers' predictions of children's real abilities are assumed to be more accurately. In this study, we found significant correlations between children's estimations about their abilities and the effective mastery of the subsequent task. A confirmatory factor

analysis showed that children who perceived their ability and their motivation as high were more able to master the tasks. By trend, children who perceived the tasks as easy were more able to solve the tasks than children whose perception of task difficulty was high. These findings contradict the common assumption that children of this age are unable to predict their effective task mastery. However, a more explicit discussion of what overestimation of ability really means is needed. In other words, this is always read as overestimation relative to some objective standard, but in applied research that objective standard is sometimes hard to achieve.

Convergent analyses showed that positive self-concept was considerably related with self-perceived ability, which confirmed our hypothesis. Additionally, children with a positive self-concept were more motivated for the tasks and their perception of task difficulty was lower. Because most previous studies linking self-concept and competence beliefs examined academic issues and slightly older children (e.g, Eccles et al. 1993), our findings indicate a robustness of this association also for younger children and non-academic tasks—at least for positive self-concept. The negative association between anxiousness/anticipation of failure and self-perceived ability was not found. The reason could lie in children's developmental status in terms of their not yet completely developed anticipation skills and/or their generally positive view. Another explanation could be that the tasks are not achievement-oriented and therefore probably do not provoke anxiety about failing. However, also the self-concept items of this scale per se could contribute to the lack of association, due to their possibly overly unspecific operationalization.

The positive relation between motivation and emotional problems contradicted our theoretical assumptions. This result may show that children with emotional problems like anxiety are more likely to answer a question in terms of social desirability. The wording of the question regarding the child's motivation ("Would you like to try it now?" / "How much

would you like to try it now?") may be more likely to provoke social desirability in these children than the questions about ability and task difficulty. There were no correlations between children's reports and adult-reported symptoms. However, the lack of significant child-adult correlations was also found in previous studies (e.g., Madigan et al., 2002). Because the children's as well as parent and teacher reports were reliable within, the missing correlations between the adults' ratings and children's self-reports could be caused by the limited relations between specific variables or tasks, like those in the child interview, for more global constructs as assessed with the SDQ (e.g., anxiety, depression).

3.5.3 Strengths and Limitations

Our study underlines the importance of including self-reports of children when investigating their perceptions. It expands knowledge on the validity of self-reported ability with children as young as 3 years old. In contrast to the missing assessment of real task mastery in other studies, we found that the self-perceived ability predicts the subsequent mastery of tasks. We included a meaningful sample of children in our analyses, and additionally, all assessments were conducted individually. We approximated construct validity in different ways and with different variables.

However, there are several aspects that need to be included in the discussion of the results. First, the sample consisted primarily of middle or upper class Swiss families. For well-founded conclusions a more diverse sample is needed. Second, the influence of different environments was not investigated. Third, common biases occurring in interviews with children have to be considered (e.g., social desirability). Fourth, the choice of the instrument for adults could have taken into stronger consideration the specificity of the tasks used in the child interview. Fifth, regarding the results, the mediating effect of self-perceived ability could be an artifact of the question order: task difficulty, self-perceived ability and motivation. We did not test alternative models that would have been possible, because we

focused on the models that fitted our hypothesis. Nevertheless, the results show a full mediation and reflect the theoretical crucial role of self-perceived ability. And lastly, we used tasks with different contents, but because we integrated them in one score for each dimension, we cannot draw conclusions concerning domain specific effects.

3.5.4 Conclusion

In spite of the limitations mentioned above, personality diagnosis and early childhood research should favor self-report as an instrument to assess internal constructs and the associated processes, as Marsh et al. (2002) argued. Persons should be seen as experts on themselves, as having the most relevant self-related information. Reducing the empirical gaps concerning self-perception of abilities in early childhood is important regarding the potential possibilities for fostering positive development. The specificity and measurability of self-perceived ability at this age can only be investigated by self-report. This study shows that children aged 3 to 5 years are able to provide differentiated reports about their abilities, the difficulty of a task, and their motivation to solve it. Additionally, this contradicts the currently prevalent notion that children as young as age 3 simply overestimate their ability in an unrealistic manner. In most aspects the results of children's reports showed satisfactory outcomes consistent with our hypotheses. The missing child-adult correspondence has to be improved by choosing instruments that are closer to the tasks, which the children are performing or operationalized more specifically with regard to the tasks. Further analyses are needed to develop the validity of this instrument with adjusted tasks. The investigation and distinct discrimination of the differences, or rather similarities, between self-perceived ability and (theoretically) related constructs, such as self-concept and self-efficacy, is necessary for precise research. We emphasize self-report as a useful measurement to assess mental processes also in preschool age in support of promoting children's resource-oriented abilities and potentials as early as possible.

Table 1

Descriptive Statistics of Self-Perceived Ability, Perception of Task Difficulty, and Motivation

	n	M	SD	Variance
Total sample				
Self-perceived ability	230	3.06	.64	.41
Task difficulty	231	2.39	.68	.47
Motivation	229	3.26	.61	.37
Age 3 years				
Self-perceived ability	142	3.05	.69	.47
Task difficulty	143	2.42	.71	.50
Motivation	142	3.27	.62	.39
Age 4 years				
Self-perceived ability	88	3.08	.57	.32
Task difficulty	88	2.33	.64	.41
Motivation	87	3.25	.60	.36

Table 2

Configural Frequency Analysis Based on the Configurations of Self-Perceived Ability, Task Difficulty, and Motivation (N = 218-222)

Configuration[a] (CL)	Motor task			Over challenge task			Compensation task			Linguistic task			Cognitive task		
	CL (*n*)	*p*	α	CL (*n*)	*p*	α	CL (*n*)	*p*	α	CL (*n*)	*p*	α	CL (*n*)	*p*	α
111 (T)	NT (5)	.26	.03	NT (3)	.12	.03	T (4)	.00*	.01	NT (4)	.08	.03	NT (1)	.27	.02
112 (AT)	AT (6)	.00*	.01	AT (6)	.00*	.01	AT (3)	.00*	.01	NT (15)	.01	.01	NT (3)	.02	.01
122 (T)	T (97)	.00*	.01	T (84)	.00*	.01	NT (141)	.04	.01	T (69)	.00*	.01	NT (71)	.11	.01
211 (T)	T (24)	.00*	.01	T (29)	.00*	.01	T (5)	.00*	.01	T (36)	.00*	.01	T (6)	.00*	.01
222 (T)	NT (48)	.03	.02	NT (64)	.12	.02	NT (55)	.20	.05	NT (66)	.37	.05	NT (115)	.36	.03
212 (AT)	NT (26)	.28	.05	NT (26)	.25	.05	NT (10)	.13	.03	AT (21)	.01*	.01	NT (16)	.49	.05
221 (AT)	AT (5)	.01*	.01	AT (6)	.00*	.01	NT (1)	.09	.02	AT (2)	.00*	.01	NT (5)	.14	.01
121 (AT)	AT (7)	.01*	.01	AT (3)	.00*	.01	NT (2)	.01	.01	NT (6)	.02	.02	NT (1)	.07	.01

Note. T = type; AT = antitype; NT = neutral; CL = theoretical classification.

[a]The digits in the Configuration column correspond to the parameter values for self-perceived ability, task difficulty, and motivation, with 1 = low parameter value and 2 = high parameter value.

*significant with adjusted p-value (Holm, 1979).

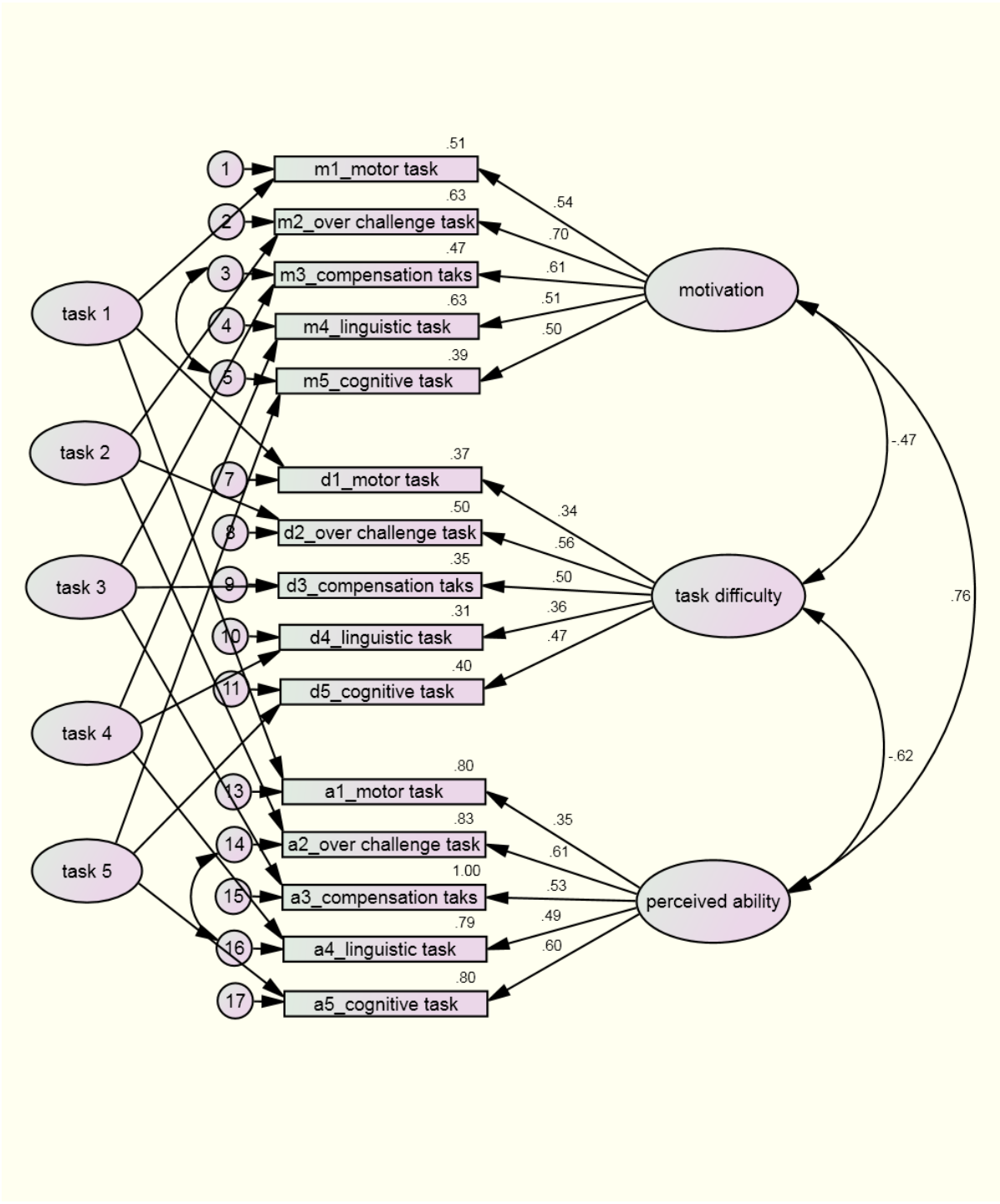

Figure 1. Confirmatory factor analysis model of the relation between self-perceived ability, task difficulty, and motivation (as latent variables), each with five items derived from the conducted tasks (as observed variables). Factor loadings for the method factors and self-perceived ability[a] task difficulty[b] and motivation[c] ($p \leq .001$): task 1: .82[a], -.50[b], .47[c]; task 2: .67[a], -.43[b], .38[c]; task 3: .85[a], -.32[b], .31[c]; task 4: .74[a], -.43[b], .61[c]; task 5: .67[a], -.42[b], .38[c].

4 Study 2: Coherence and Content of Conflict-Based Narratives: Associations to Family Risk and Maladjustment[5]

4.1 Abstract

This study examined the role of structural and content characteristics of children's conflict-based narratives (coherence, positive and aggressive themes) in the association between early childhood family risk and children's internalizing and externalizing problems in a sample of 193 children (97 girls, 96 boys) aged 3 to 5 years (M = 3.85, SD = .48). Parents participated in an interview on family-related risk factors; teachers and parents completed the Strengths and Difficulties Questionnaire; children completed conflict-based narratives based on the MacArthur Story Stem Battery (MSSB). We specifically investigated the mediating and moderating role of narrative coherence and content themes in the association between family risk and children's internalizing and externalizing problems. Children's narrative coherence was associated with better adjustment, and coherence buffered the negative effect of family risk on children's internalizing problems. Positive themes were negatively associated with externalizing problems. Telling narratives with many positive and negative themes buffered the impact of family risk on teacher-reported externalizing problems. In sum, the findings suggest that in children, being able to tell coherent and enriched narratives may buffer the impact of family risk on their symptoms, and being able to produce positive themes rather than aggressive themes is associated with lower externalizing problems.

Keywords: family risk, coherence, content, conflict-based narratives, preschoolers, maladjustment

[5] Eva Müller, Sonja Perren, & Corina Wustmann Seiler (2014). Paper under review in the *Journal of Family Psychology*.

4.2 Introduction

The family context—as young children's main reference—is crucial to children's social-emotional development. For this reason, exposure to an adverse family environment substantially increases the likelihood of child internalizing and externalizing problems (e.g., Davis, Cicchetti, & Martin, 2012). However, according to social cognitive theory, experiences are internalized in mental structures (such interpersonal scripts; Bretherton, 1990), which in turn influence later behavior. Research suggests that children's conflict-based narratives reflect these mental representations (Bretherton & Oppenheim, 2003). Producing narratives is a process of "meaning making." The importance of coherence and content as the interaction of both lies in the organization and the affective meaning making itself (Emde, 2003; Oppenheim, 2006). Additionally, content of conflict-based narratives showed to be affected by children's emotion regulation strategies (Clyman, 2003). This study aims to identify the role of coherence and content of children's conflict-based narratives in the relation of family risk and children's externalizing and internalizing problems.

4.2.1 Coherence and Content of Conflict-Based Narratives

Content themes and structural characteristics are usually assessed to evaluate children's narratives (Robinson, Mantz-Simmons, Macfie, and the MacArthur Narrative Working Group, 2002). Narrative coherence is the most common structural characteristic investigated in empirical studies. The coherence of conflict-based narratives is assumed to be an indicator of how well the underlying memory is structurally organized and interpreted. It is a reflection of how the child understands and integrates the given situation (Morris, 2007; Hudson & Shapiro, 1991). Therefore, narrative coherence is supposed to be more than only a reflection of verbal ability (Fivush, Haden, & Adam, 1995; Peterson & Biggs, 1998). Regarding conflict-based narratives, telling a coherent story requires the inclusion and response of the conflict situation (Morris, 2007).

Content themes include aggressive themes, themes of empathy and help or exclusion (Robinson et al., 2002). Usually they consist of meaningful aggregates of different coding categories. Content themes are supposed to reflect, which working model (schema, script) is activated when the child is confronted with the conflict situation. Predominant representations therefore would be more likely to show than others. In addition, research with maltreated children showed that contents of conflict-based narratives are also affected by emotion regulation strategies, e.g. in terms of avoiding certain themes or overcompensating negative feelings that are activated by the conflict situations (Aksan & Goldsmith, 2003; Clyman, 2003; Zahn-Waxler et al., 1990).

4.2.2 Coherence and Content of Conflict-Based Narratives and Family Risk

Exposure to family risk can adversely affect children's ability to cope with conflict situations—maybe also within another social context. Several studies (e.g., Appleyard et al., 2005; Deater-Deckard, Dodge, Bates, & Pettit, 1998) support the assumption of a cumulative effect of risks on the development of later internalizing and externalizing problems. The accumulation of multiple risk factors is more predictive for a negative development than only one factor (e.g., Deater-Deckard et al., 1998). In line with that assumption, there are studies that related cumulative risks to children's mental representations (e.g., Winter, Davies, & Cummings, 2010).

Coherence of conflict-based narratives as an indicator of mental organization was related to different measurements of children's family risk exposure. The ability to produce coherent narratives showed to be negatively affected by adverse family factors like intimate partner violence, low income, or psychological problems of the mother (Fiorentino & Howe, 2004; Minze, McDonald, Rosentraub, & Jouriles, 2010; Schechter et al., 2007; Zahn-Waxler et al., 1990). These findings are consistent with the assumption that disturbances in the family and related emotional distress disrupt the organization process of experiences, which is then

reflected in children's poorly organized narratives. Consequentially, conflict-based narratives may overstrain these children and evoke negative themes in the narratives, e.g., aggressive behavior (Grych, Wachsmuth-Schlaefer, & Klockow, 2002). Accordingly, children with fewer family risks would report more positive themes. However, there is inconsistent evidence that for instance the risk of a depressed mother leads to less prosocial behavior (Jones, Field, & Davalos, 2000; Zahn-Waxler et al., 1990) or more prosocial behavior (Radke-Yarrow, Zahn-Waxler, Richardson, Susman, & Martinez, 1994; Zahn-Waxler, Cole, Welsh, & Fox, 1995), which may be reflected in children's conflict-based narratives.

4.2.3 Coherence and Content of Conflict-Based Narratives and Maladjustment

Different studies (e.g., Oppenheim, Nir, Warren, & Emde, 1997; von Klitzing, Kelsay, Emde, Robinson, & Schmitz, 2000; von Klitzing et al., 2007) reported more externalizing problems in children who tell incoherent stories. Von Klitzing et al. (2000) also found a predictive affect of incoherent stories on internalizing problems, whereas other studies found no such associations (Stadelmann, Perren, von Wyl, & von Klitzing, 2007; Toth, Cicchetti, Macfie, Rogosch, & Maughan, 2000).

Several studies examined the association between aggressive themes and externalizing problems. Warren, Oppenheim, and Emde (1996) found a relation between destructive themes and externalizing problems as rated by adult informants in a non-clinical sample. Von Klitzing et al. (2000) confirmed this finding with aggressive themes. Negative-aggressive themes were also significantly correlated with parent-reported conduct problems and hyperactivity (von Klitzing et al., 2007). Zahn-Waxler et al. (1994) investigated children's narratives at different risk levels for externalizing problems and showed a significant relation to aggressive themes and emotional deregulation for 4- and 5- year olds. Most studies focused on aggressive themes but there is also evidence that children who produce more prosocial themes showed less externalizing problems (e.g., Oppenheim et al.,

1997; von Klitzing, et al., 2007). Additionally, Strayer and Roberts (2004) found more externalizing problems in children with less prosocial behavior and emphatic responding. Up to now, there is less research regarding internalizing problems and content themes. However, there is evidence for an association with aggressive themes (Oppenheim et al., 1997; Warren et al., 1996). Another study showed a positive relation between positive themes and internalizing problems (Woolgar, Steele, Steele, Yabsley, & Fonagy, 2001). Zahn-Waxler, Park, Essex, Slattery, and Cole (2005) investigated the predictive relationships among caring themes, including prosocial concern, reparation and affiliation in children's story narratives and later internalizing problems. They found a positive association between these themes and subsequent internalizing symptoms. In terms of emotion regulation, children may avoid or modify negative themes or emerging emotions that are activated by the conflict situation and therefore produce more positive themes in their narratives (Aksan & Goldsmith, 2003; Clyman, 2003; Zahn-Waxler et al., 1990). Zahn-Waxler and van Hulle (2012) proposed that the combination of risk factors (such as a difficult family situation) and a high sense of empathy might contribute to the development of internalizing disorders in children. However, fewer studies have addressed the association between positive themes and internalizing symptoms compared to aggressive themes, especially in young children.

In sum, there is evidence of a relation between coherence and content of conflict-based narratives and children's maladjustment. Research has focused on and therefore supported the relation with externalizing problems (mainly with aggressive themes and coherence). The findings concerning internalizing problems are less consistent. On the one hand, there are fewer studies that deal with conflict-based narratives and internalizing problems. On the other hand, the existing research shows somehow diverging results.

4.2.4 Mediation Effects of Coherence and Content of Conflict-Based Narratives

In line with the assumption that children's conflict-based narratives reflect their

internalized experiences and in turn have an impact on their behavior, coherence and content of conflict-based narratives are supposed to mediate the effect of family risk on children's maladjustment. Affirmative findings showed that coherence mediated the effect of intimate partner violence on externalizing problems (Minze et al., 2010). Toth et al. (2000) found that negative themes in children's narratives partly mediated the relation between maltreatment and externalizing problems but not internalizing problems. Grych, Fincham, Jouriles, and McDonald (2000) showed that the appraisals of interparental conflicts mediated the relation to internalizing problems but not for externalizing problems. The mediating role of narrative characteristics suggests that children who are unable to cope with exposure to family risk (e.g., who are not able to make sense of this information and organize it) are developing behavior or emotional problems.

4.2.5 Moderation Effects of Coherence and Content of Conflict-Based Narratives

Despite the well-established relation between family risks and children's maladjustment, there is substantial variability on an individual level with some children doing better than others given the same familial situation. This suggests that there may be other factors that moderate the influence of family risk on children's outcome. Masten and Powell (2003) state that moderating models test for interaction effects with the potential moderator as an increasing or decreasing factor on the influence of risk on the outcome. The authors emphasize tests for moderation effects in terms of identifying potential protective factors on children's development.

There is little evidence about moderation effects of conflict-based narratives. Rossman and Rosenberg (1992) found a moderator function of higher levels of control to compensate the impact of parental conflict on the psychological state of the children. Stadelmann (2006) investigated the moderation effect of narrative coherence on the relation between family climate and maladjustment but there were no significant findings.

Additionally, internal representations of relations showed to moderate the impact of parental separation on children's conduct problems (Stadelmann, Perren, Groeben, & von Klitzing, 2010). Up to now, the moderating role of children's narratives has not been investigated in further studies. However, it is important to examine whether the ability to organize experiences—as it is reflected in coherence of conflict-based narratives—may function as a factor that buffers the negative effect of adversities on children's social-emotional development.

In sum, exposure to family risk can adversely affect young children's ability to organize information adequately, which in turn may contribute to the occurrence of internalizing and externalizing problems. Although this would indicate a mediating effect of narrative characteristics, also a moderation effect has to be taken into account.

4.2.6 Age and Gender Differences in Coherence and Content of Conflict-Based Narratives

There is substantial support for the use of conflict-based narratives with children of 4 years or older. Different studies found no significant associations between aggressive themes and behavior problems for 3-year-old children, whereas for older children these correlations showed (e.g., Warren et al., 1996; Zahn-Waxler et al., 1994). Further, older children (4 and 5 years old) tell more coherent stories than 3-years olds (Warren et al., 1996). The older the child is, the more orientations and evaluations they include in their narratives (Peterson & McCabe, 1983), and the more temporal markers they use (Hudson & Shapiro, 1991). However, other studies (e.g., Luby et al., 2009) also found significant and meaningful results with children as young as age 3.

Gender differences in children's conflict-based narratives are rather stereotypic. Coherence is higher for girls (Oppenheim et al., 1997; von Klitzing et al., 2000) and they include more prosocial and caring themes (e.g., Zahn-Waxler et al., 2005). Additionally,

parents seem to support girls' caretaking behavior rather than they do with boys and therefore report more emphatic behavior for girls (Dadds et al., 2008). On the other hand, boys produce more aggressive themes in their conflict-based narratives (e.g., Oppenheim et al., 1997; von Klitzing et al., 2000; Woolgar et al., 2001).

4.2.7 Research Questions and Hypotheses

In this study, we examined the role of children's conflict-based narratives with regard to the relation between cumulative family risk and children's symptoms. First, we tested the direct impact of family risk on coherence and content of conflict-based narratives and children's maladjustment. In general, we hypothesized that family risk is negatively associated with coherence and positive themes and positively associated with aggressive themes and maladjustment. Additionally, we tested the role of coherence and content of conflict-based narratives on maladjustment. We expected coherence and positive themes to be negatively associated with maladjustment and aggressive themes to be positively related to maladjustment. Second, we tested the mediating and moderating role of coherence and content of conflict-based narratives. Third, we ran the main models for children younger than age 4 and older than age 4. Fourth, with reference to other studies that found gender differences, we tested the main models for gender effects.

4.3 Method

4.3.1 Participants

The study was part of an intervention study (Wustmann & Simoni, 2010) that involved 24 childcare centers in the German-speaking part of Switzerland. The childcare centers were selected to represent a wide spectrum of environments (rural vs. urban, ethic background, socio-economic status, etc.). A total of 193 children (97 girls, 96 boys) aged 3 to 5 years ($M = 3.85$, $SD = .48$) participated. Data collection was conducted in two measurements that were one year apart. To assess family risk, we conducted interviews with

parents at the first measurement. Applying a multi-informant approach, parents and teachers rated the externalizing and internalizing problems of children using the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) at the second measurement. Children's conflict-based narratives were also part of the second measurement. The participating families were predominantly upper-middle class and a high educational level (64.2% of mothers and 64.8% of fathers with a university degree), with 89.1% of the families being Swiss and 10.9% of other ethnicities, mainly European. In 81.3% of the families, the language spoken most often was German; 15% spoke German and one other language, and 3.6% did not speak German at home. The return rate of the questionnaires was 85% for parents and 100% for teachers.

4.3.2 Measures

4.3.2.1 Assessment of Family Risk

Family risk was assessed by a parent interview. Parents were interviewed at home. University students (trained) and the first author of this paper conducted the interviews using a standardized manual that had been developed for the purpose of this study based on current research on risk factors (e.g., Esser, Blanz, Geisel, & Laucht, 1998; Ihle, Esser, Schmidt, & Blanz, 2002; Luthar, 2006; Masten & Powell, 2003; Rutter & Quinton, 1977). Additionally, mothers and fathers filled out a questionnaire containing more sensitive questions (such as family income, physical and psychical illness of one parent). All items were statistically reduced to a dichotomous scale (0 = risk factor absent, 1 = risk factor present) to compute a linear risk variable (mean). Based on the assumption that an accumulation of risk factors leads to more symptoms, we subsumed the 15 risk factors into an overall risk score for every child, $M = .07$, $SD = .10$. The following risk factors were included: one parent family ($n = 17$) physical problems of the father and the mother (e.g., serious backache, migraine, general exhaustion; $n = 6$ and $n = 5$, respectively), psychological problems of the father and the

mother (e.g., depression, anxiety disorder, OCD; *n* = 5 and *n* = 6, respectively), low family income (low gross income; *n* = 21), low education of the father and the mother (no or only regular/limited school degree; *n* = 12 and *n* = 14, respectively), family violence current or previous; *n* = 7), serious illness or death of a parent (experienced within the last 12 month; *n* = 7), moving out of one parent, separation or divorce of the parents (experienced within the last 12 month; *n* = 5), serious illness or death of another family member (experienced within the last 12 month; *n* = 37), delinquency of the father (imprisonment; *n* = 2) and drug abuse of the father and the mother (marihuana or other drugs; *n* = 13 and *n* = 3, respectively).

4.3.2.2 Adult Reports of Maladjustment

Parents and teachers completed the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). Externalizing problems (e.g., "often loses temper") and internalizing problems (e.g., "often unhappy, depressed, or tearful") are originally represented by 5 items each. Adults rated children's problems on a 3-point scale (1 = not true, 3 = certainly true). Confirmatory factor analyses were conducted to establish a common latent factor underlying the items of the preexisting scales of the questionnaire.

The model for externalizing problems contains all five items of the parents, *M* = 1.51, *SD* = .38, and of the teachers, *M* = 1.43, *SD* = .42, separately loading on a common factor. The model fits the data well, $\chi^2[33] = 47.19$, *p* = .05, CFI = .97, RMSEA = .05, PCLOSE = .05. The latent factors correlate significantly, *r* = .21, *p* = .05 (Brown & Cudeck, 1993; Hooper et al., 2008; Hu & Bentler, 1999; Kenny, 2005). The required error covariance between two items of the teacher report might be caused by their similar meaning.

The latent factors of internalizing problems consisted of four items for parents, *M* = 1.27, *SD* = .32, and teachers, *M* = 1.29, *SD* = .39, because one item ("often complains of headaches, stomach-aches or sickness") had to be eliminated due to the low factor loading (< .30). Fit indices are good, $\chi^2[17] = 23.80$, *p* = .13, CFI = .98, RMSEA = .05, PCLOSE = .53.

Both scales have error covariances, which indicates their intersecting meaning. The two latent factors were significantly associated, $r = .26$, $p = .04$.

4.3.2.3 Children's Conflict-Based Narratives

Children completed conflict-based narratives based on the MacArthur Story Stem Battery (MSSB) (Bretherton & Oppenheim, 2003) as part of a broader evaluation. In line with the MSSB, the provided stories were standardized and consisted of the story stem, a brief narrative, which ends with a dilemma that the child is asked to solve ("show and tell me what is happening now?"). The assessment was conducted with individually at the childcare center. Six trained university students and the first author administered the story stems. We used three stories, one of the original MSSB ("three is a crowd") and two designed by the first author of this paper ("the tower": The child watches another child building a tower of blocks and tries, too, but fails; "snack time": The child is told by a teacher to set the table so that all children can eat, but the child has forgotten how to do that although the child learned how the day before). We developed stories that are close to the children's actual daily life at the childcare centers. The two new stories were designed to elicit experience of success and failure. Additionally, comparison with peers is addressed as a conflict situation. Both are situations, which are highly relevant for the childcare context. The stories were conducted in a given order and videotaped to ensure that no information was lost and that the interviewer could pay full attention to the child.

We coded and merged coherence and content of children's narratives based on the manual of Stadelmann (2006). Content characteristics were: (a) Positive themes, which consists of prosocial behavior (e.g., figure is helpful if another character is injured, sick or distressed, shows an affection towards others, is empathic, confirms, supports, another character, etc.), and "joint action." We added the variable "joint action" additionally to Stadelmann's manual; we derived the variable from the manual by Robinson et al. (2002).

Eisenberg and Fabes (2006) defined prosocial behavior as voluntary with the intention of benefit for other persons. Prosocial behavior is often activated by emphatic feelings (Eisenberg & Eggum, 2008), but not always. Therefore "joint action" was intended to comprise common behavior without observable prosocial intention or empathy (e.g., figures are playing or eating together, are doing things together), taking into account the very young age of the children. (b) Aggressive themes, comprehends verbal (e.g., figure affronted, threatened or screaming at another figure, sends another character away, teasing, bullying, laughing at others, lies to hurt another character), and physical aggressiveness (e.g., figure pushes, hits, kicks or bites another character or object, figure attacks others with an object (scissors, etc.), injures itself intentionally or kills himself). Content themes were rated on a 3-point scale (does not occur, occurs 1-2 times, occurs 3 or more times), which was dichotomized (occurs, does not occur).

Narrative coherence was rated more differentiated: 0 = no answer, 1 = narrative is fragmented and no reference to the story stem, 2 = conflict (mostly) not picked up or no solution or conditions changed so that conflict can be avoided or addressed conflict, but most of the story was incoherent, 3 = slightly simplified conditions of conflict or conflict taken, picked up a small part but incoherent, 4 = conflict addressed with no inconsistencies.

Interrater reliability was computed based the aggregated scores with the coding of an independent second rater. Raters exercised their agreement by rating videos that have been made with the same stories for the purpose of testing and training. Interrater agreement ranged from moderate (narrative coherence: $\kappa = .55$) to substantial (positive themes: $\kappa = .63$; aggressive themes: $\kappa = .66$) (Viera & Garrett, 2005). Positive themes were significantly associated ($p < .01$) with coherence, $r = .42$, and aggressive themes, $r = .21$, whereas coherence and aggressive themes were not related, $r = 11$. There were 28 children that did not tell anything that could have been coded, therefore we had to exclude them from further

analyses. There were no significant differences regarding maladjustment, gender and age differences compared to children that produced codable narratives.

4.3.2.4 Control Variables

Because story stem instruments require verbal ability, we included children's foreign language background in the models. This variable was assessed in the context of the risk factors in the parent interview and was divided into speaking the local language only (81.3% of the children) and speaking the local language at most as a second language (18.7% of the children). Foreign language background was significantly related to family risk, $r = -.16$, and teacher reported internalizing problems, $r = -.17$, $p < .05$.

Mental representations are supposed to be a reflection of the mental organization and categorization of experiences. To control for the influence of cognitive abilities, we used a scale for categorization from the *Entwicklungstest ET 6-6* [development test 6 months to 6 years] (Petermann et al., 2006). The instrument and the test scores are age adapted, and the scale includes tasks like naming colors or assigning objects correctly. Test scores can range from 0 to 10 ($M = 7.70$, $SD = 2.38$). Correlation of the two control variables is $r = .22$ ($p < .01$). There were significant correlations ($p < .05$) of cognitive ability (categorization) with the risk score, $r = -.18$, with externalizing problems, $r = -.17$ (teacher report), and, $r = -.19$ (parent report), and with internalizing teacher-reported problems, $r = -.17$. Correlation with gender, $r = .15$, showed a higher level of categorization ability than boys. Both control variables were derived from the first measurement.

4.4 Results

4.4.1 Overview of the Statistical Analyses

The following analyses were conducted using AMOS 19 (Arbuckle, 1995-2010). Missing data were estimated using Full Information Maximum Likelihood (FIML) (Kline, 2005). The accuracy of the models was estimated based on: χ^2/df (≤ 3.00), $p \geq .05$, CFI

(comparative fit index, ≥ .95), RMSEA (root mean square error of approximation, ≤ .05), and PCLOSE (probability of close fit, ≥ .05) (Brown & Cudeck, 1993; Hooper et al., 2008; Hu & Bentler, 1999; Kenny, 2005).

First, we tested the impact of family risk, coherence and content of conflict-based narratives on children's maladjustment using structural equating models (SEM; see Figure 2 and 3). For mediation analysis we first had to replace the missing values. Following Cheung and Lau (2008), we used bootstrapping to test the significance of the direct and indirect effects of the models with a confidence interval of 95% and standardized estimates. To test for moderation effects we saved the standardized residual of the multiplication product of family risk and coherence or content as a new variable, which we added as the interaction term in the model. Lastly, we tested the main models for age and gender differences.

[Figure 2-3 near here]

4.4.2 Family Risk and Externalizing Problems

Figure 2 shows the SEM for externalizing problems. Table 3 shows the fit indices and the relevant factor loadings with their *p*-values. All models fit the data very well. There was a significant main effect of family risk on adult reports of children's externalizing problems in all models. Cognitive ability (categorization) was correlated with family risk, $r = -.20$, $p = .01$, but foreign language background was not, $r = -.12$, $p = .09$.

[Table 3 near here]

4.4.2.1 Direct Effects

Coherence was negatively associated with parent reports of children's externalizing problems. The factor loadings of coherence and family risk on parent-reported externalizing problems were comparable. Coherence was significantly influenced by children's competence in speaking the local language. Positive themes in children's narratives were negatively related to parent-reported externalizing problems. Aggressive themes in children's

conflict-based narratives were not significantly associated with externalizing problems but with family risk. Children with no foreign language background produced more aggressive themes in their narratives.

4.4.2.2 Coherence and Content of Conflict-Based Narratives as Mediators

Tests of direct and indirect effects by bootstrapping showed no significant mediating effect of coherence or content on the relation between family risk and adult-reported externalizing problems.

4.4.2.3 Coherence and Content of Conflict-Based Narratives as Moderators

To test for the significance of the computed interaction term, we restrained the impact of the interaction term on adult reports to zero. Model comparison showed a significant change in the model fit with the restrained parameters for aggressive themes on teacher-reported externalizing problems, $\Delta\chi^2 = 4.22$, $\Delta df = 1$, $p = .04$, so there is a significant moderation effect, $\beta = -.16$, $p = .04$. Additionally, positive themes moderated teacher-reported externalizing problems, $\Delta\chi^2 = 5.59$, $\Delta df = 1$, $p = .02$, with, $\beta = -.15$, $p = .06$. There was no change of the model fit for coherence on teacher-reported externalizing problems, $\Delta\chi^2 = .29$, $\Delta df = 1$, $p = .59$, or parent-reported externalizing problems (coherence: $\Delta\chi^2 = .01$, $\Delta df = 1$, $p = .92$; positive themes: $\Delta\chi^2 = .04$, $\Delta df = 1$, $p = .84$; aggressive themes: $\Delta\chi^2 = 1.74$, $\Delta df = 1$, $p = .19$).

4.4.2.4 Age Differences

To test for group differences, we tested for measurement invariance (Byrne, 2004) and then applied a multi-group analysis. Tests revealed full metric invariance, and scalar invariance. We found no significant age differences for coherence, $\Delta\chi^2 = 24.19$, $\Delta df = 24$, $p = .45$, positive themes, $\Delta\chi^2 = 27.96$, $\Delta df = 24$, $p = .26$, and aggressive themes, $\Delta\chi^2 = 22.84$, $\Delta df = 24$, $p = .53$.

4.4.2.5 Gender Differences

The models were invariant (partial metric, full scalar). Imposing all restrictions of equal factor loadings across the gender groups revealed a significant change of the model fit, $\Delta\chi^2 = 47.46$, $\Delta df = 22$, $p = .00$. There was a significant gender difference in the influence of family risk on aggressive themes (boys: $\beta = -.03$, $p = .76$; girls: $\beta = .39$, $p = .00$) as well as on the influence of family risk on parent-reported externalizing problems (boys: $\beta = .39$, $p = .00$; girls: $\beta = .04$, $p = .75$). Releasing of these two restrictions avoided a significant change of the model fit, $\Delta\chi^2 = 30.79$, $\Delta df = 20$, $p = .06$. There were no gender differences for coherence, $\Delta\chi^2 = 30.42$, $\Delta df = 21$, $p = .08$, or positive themes, $\Delta\chi^2 = 21$, $\Delta df = 21$ $p = .16$, except the gender effect on the influence of family risk on parent-reported externalizing problems (see before in this section).

4.4.3 Family Risk and Internalizing Problems

Figure 3 shows the SEM for internalizing problems. Coherence was replaced with positive and aggressive themes; apart from that the model remained the same for all analyses. Table 4 shows the model characteristics. All models fit the data sufficiently to satisfyingly. Exposure to family risk was associated with teacher reports of more internalizing problems.

[Table 4 near here]

4.4.3.1 Direct Effects

Children who told coherent stories had lower teacher-reported internalizing problems. Children with no foreign language background told less coherent stories. There were no significant associations between content themes and adult-reported internalizing problems. However, aggressive themes and family risk were positively associated.

4.4.3.2 Coherence and Content of Conflict-Based Narratives as Mediators

Tests of direct and indirect effects by bootstrapping showed no significant results. Neither coherence nor content mediated the relation between family risk and adult-reported

internalizing problems.

4.4.3.3 Coherence and Content of Conflict-Based Narratives as Moderators

Restricting the effect of the interaction term (unstandardized residual of the product of coherence or content of conflict-based narratives and family risk) to adult-reported internalizing problems revealed a significant moderation effect of coherence, $\Delta\chi^2 = 6.67$, $\Delta df = 1$, $p = .01$, on teacher reports of internalizing problems, with an attenuating impact on the effect of family risk on internalizing problems, $\beta = -.20$, $p = .01$. There was no moderation of Coherence and content of the conflict-based narratives regarding the effect of family risk on teacher reported internalizing problems for positive themes, $\Delta\chi^2 = 1.52$, $\Delta df = 1$, $p = .22$, or aggressive themes, $\Delta\chi^2 = 2.83$, $\Delta df = 1$, $p = .09$, and on parent-reported internalizing problems (coherence: $\Delta\chi^2 = 0.32$, $\Delta df = 1$, $p = .57$; positive themes: $\Delta\chi^2 = .90$, $\Delta df = 1$, $p = .34$; aggressive themes: $\Delta\chi^2 = .70$, $\Delta df = 1$, $p = .40$).

4.4.3.4 Age Differences

The models were fully invariant (metric, scalar). To test for age differences, all paths were set equal between the groups. There were no differences between the groups for coherence, $\Delta\chi^2 = 16.86$, $\Delta df = 21$, $p = .72$, positive themes, $\Delta\chi^2 = 19.88$, $\Delta df = 21$, $p = 53$, or aggressive themes, $\Delta\chi^2 = 18.22$, $\Delta df = 21$, $p = .64$.

4.4.3.5 Gender Differences

The model achieved partial metric and full scalar invariance. There were no gender differences for coherence, $\Delta\chi^2 = 20.29$, $\Delta df = 18$, $p = .32$, positive themes, $\Delta\chi^2 = 18.07$, $\Delta df = 18$, $p = .45$, or aggressive themes, $\Delta\chi^2 = 26.28$, $\Delta df = 18$ $p = .09$, for parent or teacher reported internalizing problems.

4.5 Discussion

This study investigated the mediating and moderating role of narrative coherence and content of conflict-based narratives on the relation between family risk exposure and

preschool children's maladjustment. We did not find any mediating effects, but the study suggests that being able to tell coherent and enriched narratives may buffer the impact of family risk on their symptoms and being able to produce coherent narratives was associated with fewer internalizing and externalizing problems. Additionally, children who included more positive themes—in contrast to aggressive themes—are showing less externalizing problems.

4.5.1 Family Risk and Maladjustment

In line with our expectations, there was a predictive relation of family risk exposure to children's externalizing problems (as reported by teacher and parents). The effect of family risk on internalizing problems only showed in teacher reports. The more obvious relations of family risk with externalizing problems compared to internalizing problems could be partly explained by the more impeded access to children's internalizing problems by adults. Additionally, Laucht, Esser, and Schmidt (2000) stated that externalizing problems occur especially if children are exposed to psychosocial burdens in their family, whereas internalizing problems may correlate more with organic or biological risk factors. Laucht et al. (2000) argued further that externalizing problems occur earlier in life and are more common within this age group. Therefore, associations with externalizing problems could be more likely to be found because they are more strongly associated with family risk and in addition more common at preschool age.

4.5.1.1 Foreign Language Background, Cognitive Ability and Maladjustment

Foreign language background was related to internalizing problems (teacher report). This finding has already been reported in the literature (e.g., Cohen, 2006). Children with difficulties in understanding others or verbal expressing caused by insufficient local language fluency may develop internalizing problems (e.g., shyness, social withdrawal, anxiety, etc.).

Children's cognitive ability (categorization) was negatively affected by exposure to

family risks. This is in line with previous studies showing associations between cognitive development and family risk (Sameroff et al., 1993). Additionally, lower scores on cognitive ability (categorization) were associated with more externalizing problems (both informants) and internalizing problems (teacher report). Children with lower scores on categorization may have difficulties with the organization and integration of information. Therefore, the lack of categorization ability may contribute to the development of externalizing and internalizing problems.

4.5.2 The Role of Coherence of Conflict-Based Narratives

The higher children's narrative coherence, the lower their internalizing (teacher reports only) and externalizing problems (parent reports only) were. The ability to describe events in a coherent way is assumed to reflect the underlying understanding and organization of situations (Hudson & Shapiro, 1991). Disorganized understanding of conflict situations—as presented in the conflict-based narratives—may lead to overacting or withdrawal (for example, due to insecurity about the situation or the appropriate behavior). Our results are corresponding to the findings of a negative association between coherence and children's symptoms that has been shown in previous studies (e.g., Oppenheim et al., 1997).

We did not find family risk to adversely affect coherence, but coherence buffered the negative impact of family risk. Therefore, remembering experiences in an organized manner seems to serve as a protective factor against an accumulation of adverse family circumstances. Given that coherence and family risk are not directly related, the positive effect of coherence may be more general and also work for other risk situations.

Children's ability to tell coherent stories was influenced by their foreign language background. Although we could not control for language ability per se, this is in line with Fiorentino and Howe (2004), who found positive associations between coherence and language ability. In sum, this shows the impact and the potential that the ability to tell

coherent stories—which reflects an organized mental structure—can have on several aspects of children's well-being.

4.5.3 The Role of Content of Conflict-Based Narratives

As we expected, family risk exposure was associated with more aggressive themes in children's conflict-based narratives. This expands the knowledge about the association of family characteristics and aggressive themes by contrasting other studies that did not find this relation (e.g., Grych et al., 2000). Aggressive themes in children's narratives may reflect previous negative experiences or indicate the child's overwhelming with the conflict, which ends up in aggressive acting out. Further, telling stories may be a way for children to explore imagined worlds and behavior, which would not be identical with aggressiveness in reality (Emde, Kubicek, & Oppenheim, 1997).

In line with our hypothesis, the more positive themes in the narratives, the lower the children's externalizing problems (parent reports only) were. Positive and aggressive themes showed no association with internalizing problems, but they moderated the associations between family risk and externalizing problems. The more content themes (positive or aggressive) that a child produced in a narrative, the lower the impact of family risk on teacher-reported externalizing problems was. In this context, it is important to keep in mind that aggressive themes were positively associated with family risks. However, There are indications that presenting aggressive themes in narratives is within the normal development of children at this age. There may be other reasons for aggressive contents than the child's problems or aversive experiences, such as experiencing or making the story exciting (Bacigalupa & Wright, 2009; McHale, Neugebauer, Asch, & Schwartz, 1999). Considering this, adding aggressive themes may be just another way of telling enriched stories. In addition to the manual of Stadelmann (2006), we assessed if the child communicated only verbally, nonverbally (motor) or in both ways within the conflict-based narrative and in the interaction

with the interviewer. There were no significant results regarding the modus of verbalization (in terms of verbosity). However, the meaning and interrelation of content of conflict-based narratives has to be analyzed specifically.

4.5.4 Differences between Informants

It is noticeable that all significant associations of coherence and content of conflict-based narratives with externalizing problems referred to parent reports. In contrast, the models with internalizing problems showed significant effects mainly with teacher reports. The discrepancy of the results regarding parent and teacher reports is not surprising. Other studies have found parents' and teachers' reports to diverge (De Los Reyes & Kazdin, 2005). In this regard, several aspects have to be considered: (a) Children themselves may behave differently in different environments and, for example, be very obtrusive or withdrawn within the peer group at the childcare center but not at home, (b) Another explanation may be that parents and teachers may have different views of the child, because they interact in different contexts (e.g., van der Ende, Verhulst, & Tiemeier, 2012). Additionally, parents may be emotionally involved in a different manner. In general, children's internalizing problems are supposed to be less accessible for adults than the more obvious externalizing problems. In this study, internalized problems may have been more likely to be perceived by teachers because they experience these children in daily routine within a peer group (where these children may stand out as shy or withdrawn). Additionally, children's developmental status has to be considered in terms of separation anxiety when parents are leaving. Another contributing factor may be that, in the context of the intervention study (Wustmann & Simoni, 2010), at the time of the data collection 12 of the 25 participating childcare centers were conducting a program that focused on observation and documentation of children on an individual level, which may have sensitized them for the children's internalizing problems.

4.5.5 The Role of Age

There were no age differences between children aged 3 years and children aged 4 years in all analyzed models. This confirms the findings of other studies (e.g., Schechter et al., 2007) that conflict-based narratives can be used for children as young as age 3. The too demanding difficulty level of the stories might cause differences in other studies for the younger children (e.g., Warren et al., 1996; Zahn-Waxler et al., 1994). The reason why we did not find significant age differences might have been that the stories used in our study were not appropriate to reveal age differences within the range of 3 to 5 years. Our stories showed to be applicable for children of 3 years and therefore should not be problematic for older children. This indicates that a meaningful use of conflict-based narratives is possible with children as young as age 3, if the stories are age appropriate.

4.5.6 The Role of Gender

There were gender differences: Boys who were exposed to family risk showed more parent-reported externalizing problems. This is in line with the finding, that boys are reported as being more aggressive and showing more externalizing problems than girls (e.g., Deater-Deckard et al., 1998) and that it may also be due to adults making stereotypical attributions (Keenan & Shaw, 1997). However, for girls, exposure to family risks lead to more aggressive themes. Bowie (2009) found that girls with low emotional regulation are more likely to show later relational aggression. Therefore, exposure to family risks may have an impact on emotional regulation and which is shown in more aggressive themes for girls and more externalizing problems for boys. Externalizing problems showed to be related to less well-developed expressive language skills for boys (Zevenbergen & Ryan, 2010) and additionally, boys showed in general lower levels of language skills than girls (Rhee et al., 2013). Accordingly, Zahn-Waxler et al. (2008) found that boys with problems report more physical aggression and anger, whereas girls showed more verbal aggression. Another explanation

may be that externalizing behavior is socially more accepted for boys than for girls. Therefore, girls may take the opportunity of "acting out" in their narratives. As our study combined physical and verbal aggression, we might have been more likely to find significant results regarding aggressive themes for boys and girls than regarding positive themes.

4.5.7 Strengths and Limitations

Our study underlines the importance of including characteristics of children's representations when investigating the relation between family risk and maladjustment. It expands knowledge on the use of conflict-based narratives with children as young as 3 years old. In contrast to the missing moderation effects in other studies, we found that coherence and content of children's conflict-based narratives moderate the relation between family risk and maladjustment. Further research is needed with regard to the promotion of resilience.

However, when interpreting the results several aspects of the study have to be considered. First, conflict-based narratives are dependent on children's cognitive and verbal abilities and reflect therefore not only mental representations of conflict situations (Minze et al., 2010). This is supposed to be especially true for very young children. We included foreign language background as a control variable but not a measurement of language ability. Second, because this study was embedded in a larger intervention study, we had to design two new stories that included the childcare context. We used only one story from the established battery and had to leave out the introduction story due to time and children's attention constraints. Third, we had no information about protective factors that could have limited the effect of the risk. Fourth, the control variable for cognitive ability (categorization) was assessed one year before the children produced their narratives. Fifth, we tested the possibility that the enrichment of the narratives provides more information than the content with a ratio variable, but results were not significant. Further studies with very young children need to specify the meaning of children's narratives with regard to that.

4.5.8 Conclusion

This study shows that the exposure to family risk as well as coherence and content of conflict-based narratives contribute to children's maladjustment and that coherence and content alleviate the effects of family risk. However, the exposure to these risks only has an effect on aggressive themes. The fact that there is a distinct difference between teacher-reported and parent-reported symptoms even though they used the same items shows that the choice of the informants is crucial also for further studies. In line with van der Ende et al. (2012) we emphasize the considerations of different informant regarding children's adjustment—including children themselves.

The results highlight that conflict-based narratives of children as young as age 3 reflect their mental representations. However, there are also indications that content themes reflect emotion regulation strategies. Further studies have to specify especially the role content of conflict-based narratives for very young children. It may be that at this age, the enrichment of the stories is more meaningful than the contents. Especially the buffering effects should be the focus of further studies. Although this study was not conducted with a clinical sample, it points up the possibility of integrating children's self-reports in therapeutic settings to promote mental health and avoid the development of later disorders in young children who are exposed to family risk.

Table 3

Fit Indices and Direct Effects for Models Including Externalizing Problems (N = 193)

		Standardized regression weights		
Independent variable	Dependent variable	Model 1[a]	Model 2[b]	Model 3[c]
Family risk	Coherence and content	-.03	.11	.18**
	Teacher report[d]	.18*	.18*	.16+
	Parent report[e]	.19*	.22*	.22*
Coherence and content	Teacher report[d]	.01	.03	.12
	Parent report[e]	-.20*	-.18*	-.13
	Foreign language background	.18*	.00	-.10
	Cognitive ability	.11	.09	-.02
p		.23	.15	.20
χ^2 (*df* = 69)		77.46	80.92	78.68
χ^2/ *df*		1.12	1.17	1.14
CFI		.98	.97	.98
RMSEA		.03	.03	.03
PCLOSE		.94	.91	.93

Note. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; PCLOSE = probability of close fit.

[a]Model 1 including narrative coherence. [b]Model 2 including positive themes. [c]Model 3 including aggressive themes. [d]n = 193. [e]n = 164.

* p <.05. ** p < .01.

Table 4

Fit Indices and Direct Effects for Models Including Internalizing Problems (N = 193)

		Standardized regression weights		
Independent variable	Dependent variable	Model 1[a]	Model 2[b]	Model 3[c]
Family risk	Coherence and content	-.03	.11	.18**
	Teacher report[d]	.20*	.22**	.22**
	Parent report[e]	.03	.04	.05
Coherence and content	Teacher report[d]	-.18*	-.04	-.04
	Parent report[e]	-.11	.01	-.05
	Foreign language background	.18*	.00	-.10
	Cognitive ability	.11	.09	-.02
p		.22	.05	.09
χ^2 (*df* = 45)		51.90	61.90	58.09
χ^2 / *df*		1.15	1.38	1.29
CFI		.98	.95	.96
RMSEA		.03	.04	.04
PCLOSE		.87	.62	.73

Note. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; PCLOSE = probability of close fit.

[a]Model 1 including narrative coherence. [b]Model 2 including positive themes. [c]Model 3 including aggressive themes. [d]n = 193. [e]n = 164.

* p <.05. ** p < .01.

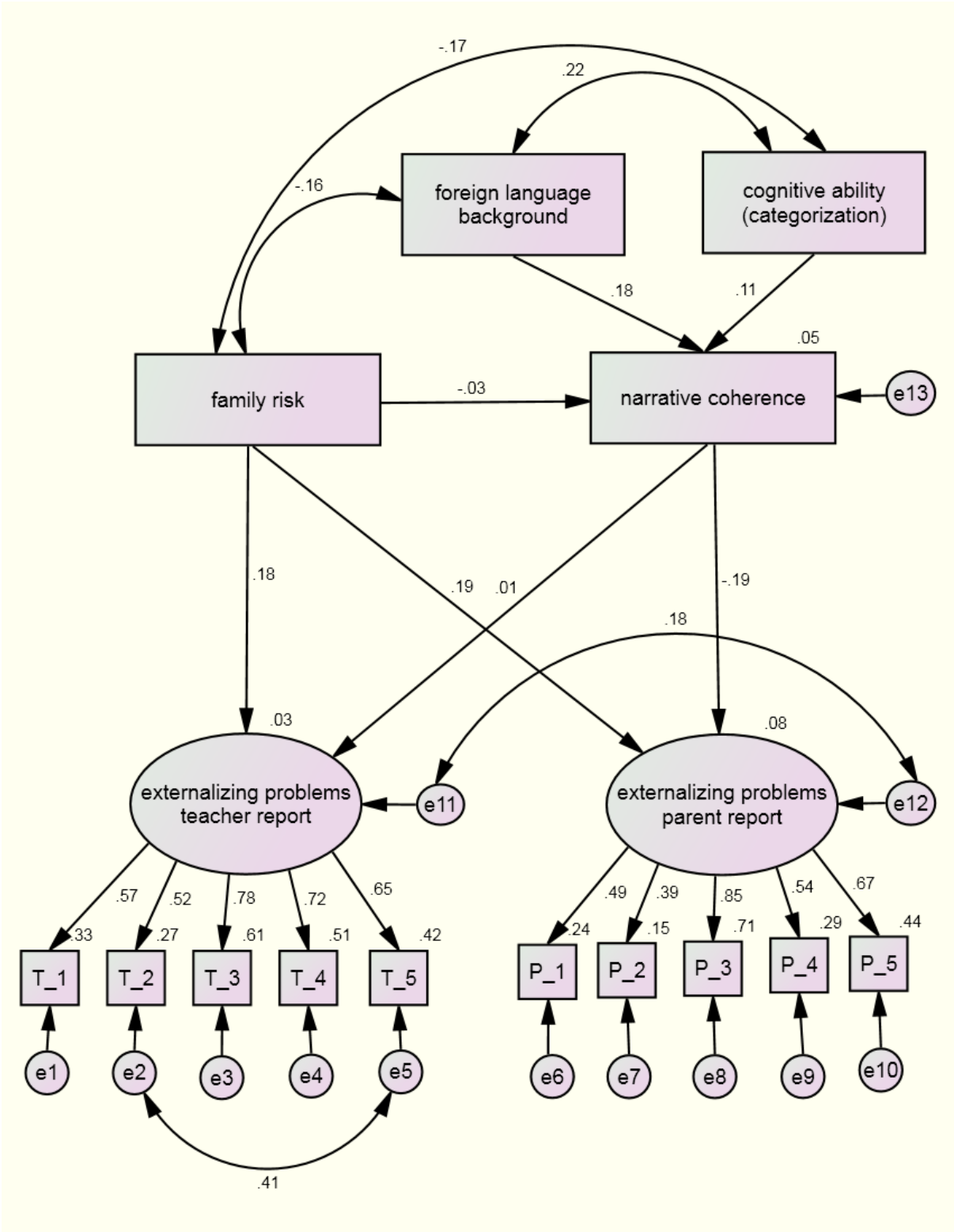

Figure 2. Structural equation model with the mean of family risk as the independent variable and adult-reported externalizing problems as dependent variables. Example for coherence, the structure of the model was maintained for analysis of content. Completely standardized robust maximum likelihood parameter estimates.

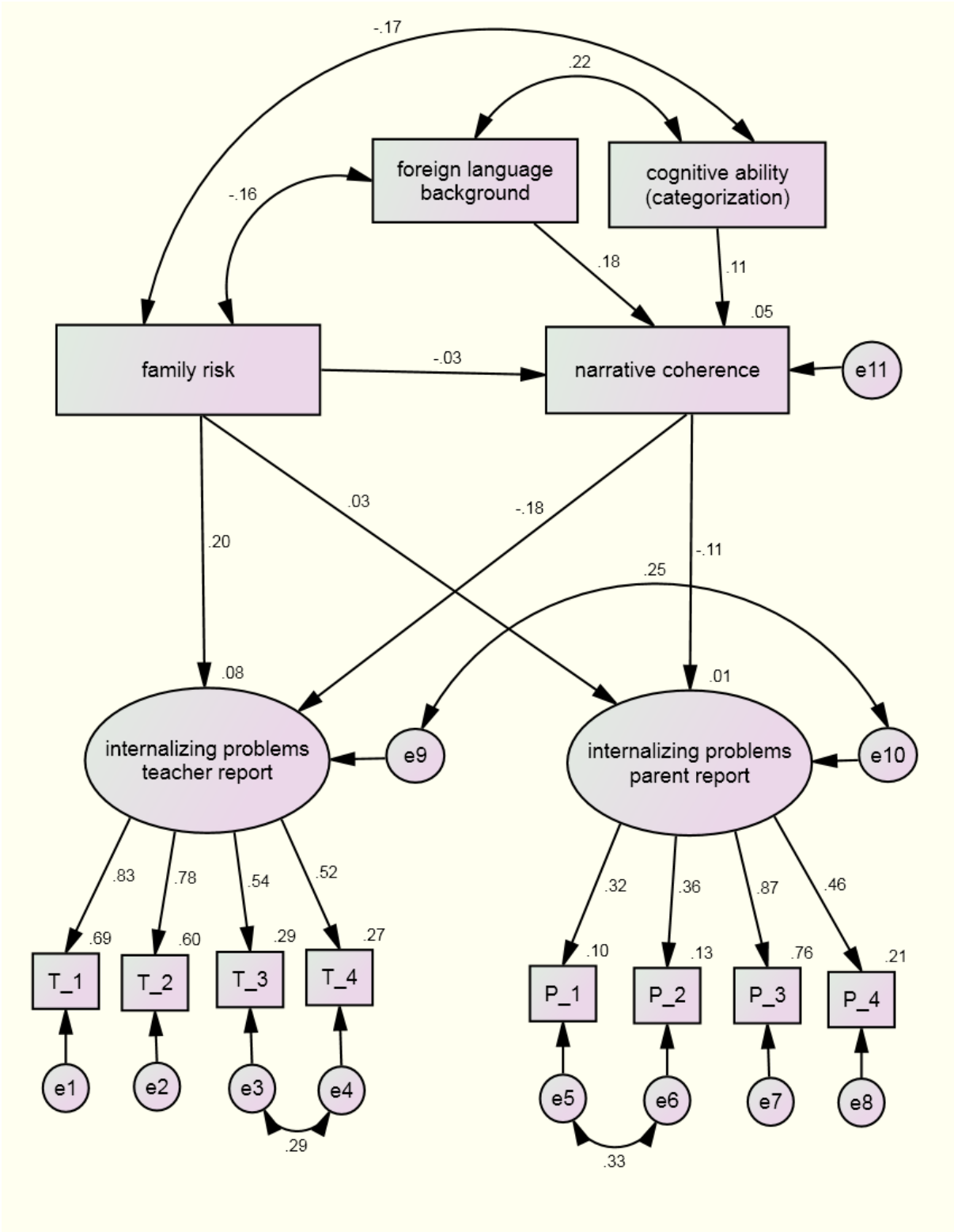

Figure 3. Structural equation model with the mean of family risk as the independent variable and adult-reported internalizing problems as dependent variables. Example for coherence, the structure of the model was maintained for analysis of content. Completely standardized robust maximum likelihood parameter estimates.

5 Study 3: The Role of Childcare Experiences in Promoting Resilience in the Social-Emotional Development of Preschoolers[6]

5.1 Abstract

The aim of this study was to investigate the impact of quality and quantity of early childcare on the social-emotional outcomes of children, in particular children that are exposed to multiple risks. The study involved 24 childcare centers and 42 groups in the German-speaking part of Switzerland. The 162 children (74 girls, 88 boys) in the sample were aged from 3 to 5 years (M = 3.83, SD = .49). Parents and teachers filled in the Strengths and Difficulties Questionnaire (Goodman, 1997) and the General Self- Efficacy Scale (Schwarzer & Jerusalem, 1999). Multiple risks were assessed using a standardized parent interview and parent questionnaires. Seventeen risk factors were subsumed into a cumulative risk index. Childcare quality was assessed by various observation instruments, e.g., ITERS-R and ECERS-R. In particular, we focused on the moderating role of different dimensions of childcare quality and quantitative indicators (duration and intensity) on the relationship between multiple risks and the children's social-emotional development. The calculated structural equation models show that high-quality teaching and interaction, provisions for learning, and professional key tasks can mitigate the negative effects of multiple risks on children's emotional problems, prosocial behavior, and self-efficacy. Additionally, more days in childcare buffer the negative effects of multiple risks on hyperactivity, conduct problems, and prosocial behavior. The duration of childcare moderates the negative impact of multiple risks on self-efficacy.

Keywords: childcare quality, children at risk, childcare centers, social-emotional development, preschool children, resilience

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[6] Corina Wustmann Seiler, Eva Müller, & Heidi Simoni (2014). Paper submitted in *Early Childhood Research Quarterly*.

5.2 Introduction

The importance of childcare quality for children's development is now beyond controversy in the professional discussion. Whereas earlier studies focused mainly on quantitative indicators of early childcare (e.g., duration and intensity of childcare), research in the past two decades also included qualitative indicators of home and preschool learning environments in the analyses. Although the findings are divergent depending on the children's age (younger or older than 3 years) and the developmental domain examined (e.g., cognitive, language or social-emotional development), several studies reported short-, medium and long-term positive effects of early childcare (e.g., for a review see Anders, 2013; Camilli, Vargas, Ryan, & Barnett, 2010; Rossbach, 2005). In particular, childcare process quality proved to be crucial. For children from educationally disadvantaged families (e.g., parents with low educational attainment or from low-income families), early access to childcare as well as high process quality has been shown to be beneficial (e.g., Peisner-Feinberg et al., 2001; Sammons et al., 2008).

This paper examines the impact of the quality and quantity of center-based early childcare on social-emotional outcomes of children, in particular children that are exposed to multiple risks. Two protective or resilience mechanisms were examined: the main effects model as well as the interaction or moderation model. At present, there is only limited evidence for a mitigating impact of childcare quality on the negative effects of risk exposure on children's cognitive and social-emotional development. This argues for childcare quality as a protective factor for children at risk (Burchinal, Peisner-Feinberg, Bryant, & Clifford, 2000; Hall et al., 2009, 2013; NICHD, 2002). However, especially in the area of social-emotional development, little research has been conducted, and the assessment of risk exposure or "children at risk" in the studies has been extremely heterogeneous (e.g., in terms of number and "severity" of the included risk factors). Therefore, in this study we applied a

multiple risk approach based on the research on risk and resilience (e.g., Laucht et al., 2000; Masten & Coatsworth, 1998; Rutter, 2000; Werner & Smith, 2001). Biological and psychosocial risk factors are considered. In addition, different dimensions of process quality are investigated instead of global process quality, and quantitative indicators of early childcare (duration and intensity) are included in the analyses. Thus, the results can provide new information regarding prevention and intervention with children at risk in everyday center-based childcare settings.

5.2.1 Quality of Early Childcare

There is international agreement regarding the conceptualization of childcare quality. The comprehensively accepted model distinguishes structural, procedural, and contextual dimensions referring to structural quality, process quality, and educational orientations (e.g., Kuger & Kluczniok, 2008; Pianta et al., 2005). Structural quality refers to temporally stable, situation-independent conditions, such as teachers' level of education, group size, or adult-child ratio. Process quality indicates the dynamics and processes within the groups, the interaction with others, the materials, and activities (Clifford, Reszka, & Rossbach, 2010). Educational orientations characterize attitudes, beliefs, and values of the teachers, such as conceptions of the developing child or perceptions about the function of childcare centers. There is a body of evidence that structural characteristics and features of teachers' belief systems predict process quality (e.g., Cryer, Tietze, Burchinal, Leal, & Palacios, 1999; ECCE Study Group, 1997, 1999; Kuger & Kluczniok, 2008). Process quality has the highest impact on children's developmental outcomes and therefore is characterized as the central dimension of childcare quality.

5.2.2 Effects of Early Childcare on the Social-Emotional Development of Children

5.2.2.1 Effects of Childcare Quantity

Different studies confirmed short-, medium and long-term negative effects of early

and extensive use of early childcare in the first years of life on children's social-emotional development (e.g., NICHD, 2003; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007). A higher "dosage" is associated with more problematic and less prosocial behavior of children, with more conflictual relations with the mother, or with higher impulsivity. But there are also studies that found no relationship between intensity of childcare and duration in the first years of life and children's social-emotional development (e.g., Bornstein, Hahn, Gist, & Haynes, 2006; Votruba-Drzal, Coley, Maldonado-Carreño, Li-Grining, & Chase-Lansdale, 2010) or that reported positive effects (e.g., Andersson, 1992; Tietze et al., 2012). In a meta-analysis Cooper, Allen, Patall, and Dent (2010) showed that a higher extent of childcare (full day versus half-day) was associated with more self-confidence and a higher ability to cooperate but also with more behavior problems in the children. Accordingly, Sylva et al. (2004c) concluded that the duration of childcare is associated with more antisocial behavior in children in their early school years.

5.2.2.2 Effects of Childcare Quality

Research on the effects of the quality of early childcare on children's social-emotional development is less distinct than research on children's cognitive and language development, particularly for the first three years of life. Although the majority of short-, medium and long-term effects of high quality on social-emotional outcomes were found to be positive (e.g., ECCE Study Group, 1997, 1999; Loeb, Fuller, Kagan & Carrol, 2004; Peisner-Feinberg et al., 2001; Sammons et al., 2008; Votruba-Drzal et al., 2010), also zero effects or inconsistent findings were observed in longitudinal studies (e.g., Wylie, Ferral, Hodgen, & Thompson, 2006). For example, the EPPE study showed that high global process quality reduces the negative effects of a high intensity of center-based early childcare in the first years of life and may result in a positive development of prosocial behavior and self-regulation as well as in lower hyperactivity and less antisocial behavior (e.g., Sammons et al., 2008).

In sum, the empirical findings on the impact of quantity and quality of early childcare are heterogeneous. Anders (2013) pointed out that: (1) measures of social-emotional development status relied mainly on different assessments as well as on subjective reports of parents and teachers and rarely on standardized tests, and (2) qualitative indicators were not always included in the study designs. Thus, when childcare quality is taken into account, in most cases the negative effects of duration and intensity of childcare can no longer or less be observed (Rossbach, 2005).

5.2.3 Effects of Multiple Risk Exposure

Research on risk and resilience has shown that risk factors rarely occur in isolation and tend to be cumulative (Laucht et al., 2000; Masten & Coatsworth, 1998; Rutter, 2000). For example, children who grow up in chronic poverty are more likely to have parents who are single parents, unemployed, mentally ill, or addicted to alcohol. They often have more health hazards and adverse living conditions. Accordingly, multiple and co-occurring risks can add up or reinforce each other. With increasing exposure to risk, developmental impairments become more likely (Laucht et al., 2000). Empirical studies have shown that individual risk factors correlate only marginally with maladjustment (Rutter, 2000). Therefore, children with multiple risk exposure are considered in particular to be at risk for developmental maladjustment. Numerous studies found negative effects of multiple risk exposure on the cognitive and social-emotional development of children from early childhood to adulthood (e.g., Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006; Gutman, Sameroff, & Cole, 2003; Pungello et al., 2010).

5.2.4 Results of Resilience Research

Studies on resilience show that even children with a high level of risk can nonetheless become—against all expectations—self-confident and competent adults if they find stable and appreciative support in their social environment. The findings provide important

implications for prevention and intervention with children at risk and in particular raise the question as to the role of early childcare and education. Resilience is a broad conceptual umbrella related to positive patterns of adaptation in the context of adversity (Masten & Obrandović, 2006). The term resilience refers to "the capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development" (Masten, 2011, p. 494). Although studies on resilience use significantly different conceptualizations of risks and methodologies (e.g., regarding sample, choice of methods, risk domains investigated, and criteria defining what "successful" adaptation actually is) and the resilience approach has a number of conceptual and methodological ambiguities per se (e.g., Luthar et al., 2000; O'Dougherty Wright et al., 2013; Rutter, 2000), many studies have produced consistent findings with respect to the factors that characterize resilience and are crucial for its development. Basically, it is assumed today that resilience is not an innate personality trait of a child but rather is a capacity that is acquired in the course of development and in the context of child-environment interactions (e.g., Kumpfer, 1999; Wang & Deater-Deckard, 2013). The basis for the development of resilience lies in special external protective processes or resiliency factors within the child. Protective factors can be defined as characteristics and influencing variables that facilitate coping with stress, reduce the negative effects of risk, and increase the likelihood of positive mental health outcomes (Rutter, 1990). Two models have been proposed for protective mechanisms regarding the relation of risk and outcome: the main (or direct) effects model and the moderator (or interaction) model (e.g., Masten, 2012). The main effects model recommends that a variable has direct effects on mental health, regardless of the levels of adversity experienced. The moderator model mentions that a variable buffers the negative effects of risks in an interactive way.

The following protective factors have proved to be of particular importance in

resilience research: at least one stable, reliable significant other, problem-solving skills, self-efficacy beliefs, a realistic and positive self-concept, the ability of self-regulation and impulse control, and active and flexible coping behavior, for instance the ability to mobilize social support (for a review, see e.g., O'Dougherty Wright et al., 2013; Werner, 2013). In the Kauai study (e.g., Werner & Smith, 2001) many resilient children received emotional and social support outside of their family; many children named teachers who gave them attention, spoke up for them, and challenged them. These supporting persons of reference outside the family not only contributed to the immediate problem reduction but also served as role models for active and constructive coping behavior and prosocial behavior.

5.2.5 Childcare Quality and Quantity as Protective Factors for the Development of Resilience

Only a few studies up to now have examined the role of childcare quality as a protective factor for promoting resilience in children at risk. The focus was mainly on cognitive outcomes (Burchinal, Peisner-Feinberg, et al., 2000; Hall et al., 2009, 2013; NICHD, 2002; Vandell et al., 2010) and less on social-emotional outcomes (Hall et al., 2013; Vandell et al., 2010). In addition, the majority of studies included family risk factors (e.g., low family income, low parental education, maternal depression) (Burchinal, Peisner-Feinberg, et al., 2000; NICHD, 2002; Vandell et al., 2010) but rarely considered any cumulative biological, psychological, and psychosocial risks (Hall et al., 2009, 2013). Hall et al. (2009) demonstrated that high global process quality as measured by the Early Childhood Environment Rating Scale Revised Edition (Harms et al., 1998), good teacher-child interaction as measured by the Caregiver Interaction Scale (Arnett, 1989), and a high level of specific quality of curricular provision as measured by the Early Childhood Environment Rating Scale – Extension (Sylva, Siraj-Blatchford, & Taggart, 2006) proved to be a protective factor for cognitive development (assessed as general cognitive abilities at school

entry) in children who were exposed to multiple child or familial risks. Hall et al. (2009) based their analysis on a total of 22 risk factors (7 child risks and 14 familial risks), including gender, number of siblings, family income, and parents' education, employment level, and age. The results revealed differences between distal and proximal influences: Good (proximal) teacher-child interaction proved to be a protective factor for (proximal) child risks, whereas a protective function for (distal) familial risks was found for the global (distal) process quality. The specific quality of curricular provision moderated the effects of both child and familial risks on children's cognitive development.

In a follow-up, Hall et al. (2013) included in addition social-emotional outcomes and the duration of attendance at childcare centers in their investigation. They concluded that high process quality of center-based early childcare proved to be a stronger protective factor for cognitive outcomes (46%) than for social-emotional outcomes (15%). Furthermore, moderation effects of process quality on the social-emotional development of the children were stronger in child risks than in familial risks. High quality interaction between teachers and children in combination with a longer duration of childcare was found to be protective regarding self-regulation and anti-social behavior in child risks. Comparable results were shown for high specific quality of curricular provision regarding antisocial behavior. And regardless of the childcare quality, a longer duration of childcare had a moderating effect for antisocial behavior in child risks.

5.2.6 Research Questions

The aim of this study was to investigate the impact of qualitative and quantitative indicators of center-based early childcare on social-emotional outcomes of children, in particular of children who are exposed to multiple risks. Additionally, we tested childcare quality and quantity for direct and moderating effects (main effects model as well as interaction model). Furthermore, effects of gender and age were controlled in all analyses.

The study examined the following research questions:

- What effects do the quality and quantity of center-based early childcare have on social-emotional competences and problems of children aged 3-5 years?
- What effects do the quality and quantity of center-based early childcare have on social-emotional competences and problems of 3- to 5-year-old children who are exposed to multiple risks?
- Can quality and quantity of center-based early childcare buffer the negative effects of multiple risks on social-emotional competences and problems of 3- to 5-year-old children and thereby contributing resilience?

5.3 Method

5.3.1 Study Design and Sample

This study was part of a larger intervention study (see author note) that involved 24 childcare centers in the German-speaking part of Switzerland. The study was designed with two measurement points that were one year apart. The first measurement comprised a parent interview and parent questionnaires regarding children's risk exposure. At the second measurement—applying a multi-informant approach—children's social-emotional competences and problems were reported by parents and teachers on the basis of the Strengths and Difficulties Questionnaire (Goodman, 1997) and the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1999). The assessment of the childcare quality and quantity was also part of the second measurement. The sample consisted of 162 children (74 girls, 88 boys) aged 3-5 years (M = 3.83, SD = .49, Min = 2.91, Max = 4.97).

The childcare centers applied for participation in the study and were then selected to cover a wide spectrum of environments (rural vs. urban, ethnic background, socioeconomic status, etc.). Parents gave written informed consent to participate with their child in the study. Overall, 57% of the parents agreed to participate in the study. The participating families were

mainly upper-middle-class residents with a higher educational level (68.5% of mothers and 63.0% of fathers had a university degree); 73.5% of mothers and 72.8% of fathers had Swiss nationality and a minority had other ethnicities, mainly European. In 87% of the families, the main language spoken was German; 13% spoke at least one other language. The return rate of the questionnaires for outcome measures was 87% for parents and 100% for teachers.

5.3.2 Measures

5.3.2.1 Indicators of Childcare Quality

Process quality of the childcare centers was measured using the following observational instruments (German versions): (a) the Infant/Toddler Environment Rating Scale Revised (ITERS-R, 0-3 years) (Harms et al., 2003; Tietze et al., 2005), (b) the Early Childhood Environment Rating Scale – Revised Edition (ECERS-R, 3-6 years) (Harms et al., 1998; Tietze et al., 2007), (c) the Early Childhood Environment Rating Scale – Additional aspects (ECERS-Z, 3-6 years) (Rossbach & Tietze, in prep.). The ITERS-R was designed to assess the global process quality of childcare settings serving children from birth to 36 months of age. The scale includes 41 items and contains of aspects of space and furnishings, personal care routines, listening and talking, activities, interaction, program structure, and parents and staff. The ECERS-R is the equivalent of the ITERS-R and the most widely used measure of global process quality in early childcare settings serving children from 3 to 6 years of age. The scale is made up of 43 items covering the same spectrum as the ITERS-R. The ECERS-Z assesses additional aspects of the ECERS-R and is composed of six items representing familiarization, pedagogical conception, observation and documentation of children's learning, individualization of educational processes, internal and external communication, and autonomy.

We derived three scales for the measurement of process quality using exploratory factor analysis (EFA) with varimax rotation (see Clifford et al., 2010; Sakai, Whitebook,

Wishard, & Howes, 2003): (1) teaching and interaction, average of ITERS-R (8 items: staff-child interactions, peer interactions, supervision of play and learning, discipline, helping children understand language, helping children use language, free play, group play activities, promoting the social-emotional development of children; R^2 = 26.80%, Cronbachs α = .82) and ECERS-R (5 items: using language to develop reasoning skills, informal use of language, discipline, staff-child interactions, interactions among children; R^2 = 27.21%, Cronbachs α = .80;), (2) provisions for learning, average of ITERS-R (7 items: room arrangement, using books, fine motor, art, music and movement, blocks, promoting acceptance of diversity; R^2 = 14.77%, Cronbachs α = .59) and ECERS-R (6 items: room arrangement for play, books and pictures, fine motor, blocks, dramatic play, math/number; R^2 = 28.31%, Cronbachs α = .66), and (3) professional key tasks (ECERS-Z, 3 items): observation and documentation of children's learning, individualization of educational processes, internal and external communication (R^2 = 58.37%, Cronbachs α =.60). All items were rated on a 7-point scale from 1 (inadequate) to 7 (excellent). Table 5 shows descriptive statistics of the scales.

Measurement of process quality was accomplished in 42 groups of the 24 childcare centers by four highly trained observers (including test of interrater reliability). The sample represents a randomized selection of groups based on the size of the childcare centers. This selection was necessary because of the amount of effort and time that was needed for the measurement of process quality, which was about 6 to 8 hours per group by two observers. Because of the large range of the children's ages within the groups (M = 2.57, SD = 2.07, Min = 0.46, Max = 11.83), ITERS-R as well as ECERS-R were used in parallel in the majority of cases (41 ITERS-R, 31 ECERS-R, 1 only ECERS-R). At the end of the assessment the two observers independently completed the ratings; discrepancies between the two observers' scores were resolved by discussion until consensus was reached.

Provisions for learning was positively correlated to teaching and interaction, r = .27, p

= .05, and professional key tasks, r = .48, p = .00, whereas there was no significant association between teaching and interaction and professional key tasks, r = .11, p = .68.

5.3.2.2 Indicators of Childcare Quantity

Intensity of childcare (number of days a child attends childcare per week) and duration of childcare were assessed via standardized parent interviews in combination with the assessment of the child's risks (see Table 5). Intensity of childcare was reported in steps of half-days ranging from 1 (1 day) to 9 (5 days). Almost half of the children (45.1%) spent 2 days per week at the childcare center, 8.6% 2.5 days, and 23.5% 3 days. Most children had been in childcare since they were between 3 and 12 months old (3-6 months: 24.1%, 7-12 months: 23.5%), 28.4% were 1-2 years old, and 19.7% 2-3 years old. Quantitative indicators were not significantly related to qualitative indicators.

[Table 5 near here]

5.3.2.3 Multiple Risks Assessed by a Parent Interview and Questionnaires

Parents were interviewed at home one year before the other measures, due to the study design, using a standardized manual that we developed for this study based on research concerning risk factors (e.g., Esser et al., 1998; Ihle et al., 2002; Laucht et al., 2000; Rutter & Quinton, 1977). Additionally, mothers and fathers completed a questionnaire containing more sensitive questions (e.g., family income, physical and mental illness of parents). All items were reduced to a dichotomous scale (0 = risk factor absent, 1 = risk factor present). Based on the assumption that an accumulation of risk factors raises the probability of more symptoms, we subsumed 17 risk factors into an overall risk score that includes biological and psychosocial risks (M = .05, SD = .05; see Table 5). The following factors were included: (a) biological risks: birth complications (e.g., instrumental delivery, without cesarean; 9.3%), low birth weight (< 2.5 kg; 7.4%), chronic disease of the child (e.g., skin disease, visual or hearing impairment; 9.3%), and (b) psychosocial risks: single parent family (11.1%),

delinquent behavior of the father (imprisonment; 1.2%), drug abuse of one parent (marihuana or other drugs; 1.9%), adoptive child (not biological child of the parents; 1.4%), violence in the family (current or previous; 2.5%), illness / disabilities / health problems of a sibling (e.g., mental handicap; 3.1%), partnership disharmony in the parents (endless discussions or loud arguments; 2.5%), frequent temporary separations in the current partnership of the parents (≥ 3 separations; 0.6%), young parenthood (<18 years; 0.7%), family with many children (≥ 4 siblings; 1.2%), mental illness in a parent (e.g., depression, anxiety disorder; 1.2%), poverty (low family income, < 5'200.- CHF; 13%), low parental education (primary school degree; 1.2%), adverse living conditions (≤ 40 m^2 and > 1.25 persons per room; 1.9%). The number of children's risk exposures ranges from 1 to 5 risk factors (1 risk factor: 35.8%, 2 risk factors: 15.4%, 3 risk factors: 2.5%, 5 risk factors: 0.6%). The multiple risk score was not associated with childcare quality or quantity and not related to children's age or gender.

5.3.2.4 Assessment of Children's Competences and Problems by Adult Informants

Teachers and parents completed the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997), which is a widely used, brief behavioral screening questionnaire with well-established psychometric properties for young children. Responses on the SDQ are scored on a 3-point Likert scale ranging from 1 (not true) to 3 (certainly true). For our sample, we used the versions for 3- to 4-year-olds. The instrument consists of five scales. Due to an insufficient model fit, we had to exclude one scale (peer problems) from further analyses. Confirmatory factor analyses (CFA) were conducted to establish a common latent factor underlying the SDQ items of the preexisting scales of the questionnaire. All models fit the data well, $\chi^2/df \leq 1.40$, CFI ≥ .96, RMSEA ≤ .05, SRMR ≤ .05. The teacher and parent reports correlated significantly for conduct problems, $r = .32$, $p = .01$, emotional problems, $r = .24$, $p = .05$, hyperactivity, $r = .42$, $p = .00$, and prosocial behavior, $r = .40$, $p = .00$. We had

to eliminate one item of the original scale for emotional problems ("often complains of headaches, stomach-aches or sickness") and prosocial behavior ("shares readily with other children, for example toys, treats, pencils") because of low factor loading (< .30). Descriptive statistics of the scales are reported in Table 5.

5.3.2.5 Assessment of Children's Self-Efficacy by Adult Informants

The General Self-Efficacy Scale (Schwarzer & Jerusalem, 1999) is a 10-item psychometric scale designed to assess optimistic self-beliefs in ability to cope with a variety of difficult demands in life (e.g., "My/The child can solve most problems, if he/she invests the necessary effort."). All items are similarly poled and rated on a 4-point Likert scale from 1 (not at all true) to 4 (exactly true; see Table 5). Fit indices of the model were good, χ^2 = 198.90, *df* = 164, *p* = .03, CFI = .97, RMSEA = .04, SRMR = .05. The latent factors of parents and teachers report correlated significantly, *r* = .20, *p* = .04.

5.4 Results

5.4.1 Overview of the Statistical Analyses

Although the childcare quality was assessed at the group level, we did not apply multilevel analysis for further calculations. According to Langer (2010) and Julian (2001), a stable estimate of the multilevel model requires a minimum of cases per group (10 individuals per cluster) that was not given in our study (average cluster size: 3.86 children, Min = 1 child, Max = 11 children). Additionally, intraclass correlation coefficients (ICC) were rather small to moderate, parent report: .07, teacher report: .02–.20. However, we did not ignore the multilevel structure of the data, as we used the clustered data option (TYPE = complex, estimator = MLR) implemented in Mplus (version 7.1, Muthen & Muthen, 1998–2012) to adjust for non-independence. Missing data were estimated using the full information maximum likelihood approach (FIML), which uses all available data to estimate model parameters (e.g., Arbuckle, 1996). Determining the model fit was based upon the following

fit-indices (see, for example, Brown & Cudeck, 1993; Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Müller, 2003): χ^2/df (≤ 3.00), RMSEA (root mean square error of approximation, $\leq .05$), CFI (comparative fit index, $> .90$), and SRMR (standardized root mean squared residual, $\leq .05$). Given the small sample size also results with a significance level of $p < .10$ (marginal significance) are reported.

The following analyses were conducted: First, we tested the effects of multiple risks and childcare quality as well as quantity (intensity and duration of childcare) on children's competences and problems using separate structural equation models (SEM). Then, all variables were entered simultaneously in the final models (main effects model, see Figure 4). To test for moderation effects of childcare quality and quantity, we had to center the relevant variables (grand mean centering) and then build the product of multiple risks and each quality and quantity indicator as a new variable (Risk x Quality indicator or Risk x Quantity indicator), which was added as the interaction term in the models (interaction or moderating model, see Figure 4).

[Figure 4 near here]

5.4.2 Multiple Risks and Children's Adjustment

The models including multiple risks and measures of children's adjustment (controlled for age and gender) showed a significant association for teacher-reported emotional problems, $\beta = .15$, $p = .05$, and, by trend, for teacher-reported hyperactivity, $\beta = .15$, $p = .09$. Fit indices were acceptable for all models, $\chi^2/df \leq 1.35$, CFI $\geq .94$, RMSEA $\leq .05$, SRMR $\leq .05$.

5.4.3 Quality and Quantity of Childcare and Children's Adjustment

Models were computed separately including indicators of childcare quality and quantity (controlled for age and gender). For childcare quality, provisions for learning had a positive effect on children's parent-reported conduct problems, $\beta = -.33$, $p = .00$, and, by

trend, on parent-reported hyperactivity, $\beta = -.19$, $p = .06$. Teaching and interaction predicted teacher reports of prosocial behavior, $\beta = .21$, $p = .00$, and parent-reported emotional problems, $\beta = -.32$, $p = .02$. There were no relations between professional key tasks and adult-reported symptoms and no associations between any scale of childcare quality and adult reports of self-efficacy. Fit indices were satisfactory for all models, $\chi^2/df \leq 1.40$, CFI $\geq .92$, RMSEA $\leq .05$, SRMR $\leq .06$.

For childcare quantity, there were no significant associations with adult reports of prosocial behavior and emotional problems. However, intensity of childcare was positively related to hyperactivity (both informants, parents: $\beta = .22$, $p = .03$, teachers, by trend: $\beta = .21$, $p = .06$), teacher-reported conduct problems, $\beta = .30$, $p = .00$ and, by trend, parent-reported self-efficacy, $\beta = .16$, $p = .10$. Controversially, the duration of childcare was, by trend, negatively related to parent-reported hyperactivity, $\beta = -.18$, $p = .06$. The models fit the data well, $\chi^2/df \leq 1.33$, CFI $\geq .94$, RMSEA $\leq .05$, SRMR $\leq .05$.

5.4.4 Multiple Risks, Childcare Quality and Quantity Predicting Children's Competence

We investigated the impact of childcare quality and quantity and multiple risks on children's prosocial behavior and self-efficacy. Fit indices were very good (see Table 6). Table 7 shows standardized regression weights.

[Table 6-7 near here]

5.4.4.1 Prosocial Behavior

Multiple risks were not associated with adult-reported prosocial behavior (parents: $\beta = -.05$, $p = .69$; teachers: $\beta = .08$, $p = .33$). A higher score on teaching and interaction predicted teacher-reported prosocial behavior significantly. Girls showed more prosocial behavior than boys as reported by parents and teachers.

5.4.4.2 Self-Efficacy

There were several relations by trend: Teacher-reported self-efficacy was predicted by professional key tasks and multiple risks, β = -.15, p = .10. Multiple risks did not affect parent reports of self-efficacy, β = -.05, p = .69. Teacher-reported self-efficacy was higher for older children and for girls. Parents reported higher self-efficacy the more days the children spent in the childcare center.

5.4.5 Multiple Risks, Childcare Quality and Quantity Predicting Children's Maladjustment

Following the same procedure as presented above, we examined the impact of childcare quality and quantity and multiple risks on children's maladjustment. All models fit the data sufficiently (see Table 6). Table 8 shows standardized regression weights.

[Table 8 near here]

5.4.5.1 Conduct Problems

Multiple risks were not associated with adult-reported conduct problems (parents: β = .07, p = .54; teachers: β = -.08, p = .35). Higher scores of provisions for learning led to lower conduct problems (parent report). A higher intensity of childcare was positively related to teacher reports of conduct problems. Additionally, older children and boys showed more conduct problems than younger children and girls.

5.4.5.2 Emotional Problems

Multiple risks predicted teacher reports of emotional problems by trend, β = .15, p = .09, but not parent reports, β = .12, p = .13. Teaching and interaction affected parent reports of emotional problems negatively. Additionally, there was a trend that older children had lower levels of emotional problems according to parents.

5.4.5.3 Hyperactivity

There was no significant impact of multiple risks on adult reports of hyperactivity

(parents: β = -.06, p = .51; teachers: β = -.13, p = .12). A higher score on provisions for learning was associated with lower hyperactivity as reported by the children's parents. The more days children were in childcare, the more adult-reported hyperactivity. The duration of childcare was negatively associated with parent-reported hyperactivity. Boys showed more hyperactivity than girls as reported by both informants.

5.4.6 Childcare Quality and Quantity as Moderators

5.4.6.1 Moderation Effects of Childcare Quality

Moderation effects were computed for each scale of childcare quality separately, with or without taking childcare quantity into account (controlled for age and gender, however). All moderation models showed acceptable fit indices, $\chi^2/df \leq 1.30$, CFI $\geq .92$, RMSEA $\leq .05$, SRMR $\leq .06$. Moderation effects of childcare quality were found to be independent of childcare quantity. There was a significant moderation effect of teaching and interaction, β = -.20, p = .01, and provisions for learning, β = -.14, p = .05, on the relation between multiple risks and parent-reported emotional problems (with and without taking into account childcare quantity). There were no further moderation effects on adult-reported problems. However, there was a positive moderation effect of professional key tasks on teacher-reported prosocial behavior, β = .14, p = .04 (β = .16, p = .04, when we controlled for childcare quantity). Additionally, professional key tasks had, by trend, a moderating effect on parent reports of self-efficacy, β = .23, p = .08, which was maintained if we controlled for childcare quantity, β = .24, p = .06.

5.4.6.2 Moderation Effects of Childcare Quantity

Moderation effects were computed for each variable of childcare quantity separately, with or without taking childcare quality into account (controlled for age and gender). All moderation models showed good fit indices, $\chi^2/df \leq 1.27$, CFI $\geq .95$, RMSEA $\leq .05$, SRMR $\leq$ .06. There was a moderation effect of the intensity of childcare on the association between

multiple risks and conduct problems, hyperactivity, emotional problems, and prosocial behavior. More days in childcare buffered, by trend, the effect of multiple risks on teacher reports of conduct problems, β = -.20, p = .08, and had a significant effect on teacher-reported hyperactivity, β = -.26, p = .00. Additionally, more days in childcare also minimized the negative impact of multiple risks on children's prosocial behavior, β = .20, p = .04 (teacher report). However, there was also a moderation effect, which at least by trend increased parent-reported emotional problems, β = .28, p = .08. Including childcare quality in the moderation models in terms of control neutralized the significant effect of intensity on teacher-reported conduct problems, β = -.19, p = .11. The effects on hyperactivity, β = -.25, p = .01, and prosocial behavior, β = .20, p = .02, were maintained. The moderation effect by trend on emotional problems became significant when we introduced childcare quality into the model, β = .25, p = .05.

The duration of childcare was found to significantly moderate the negative impact of multiple risks on parent-reported self-efficacy and emotional problems independently of childcare quality. The duration of childcare buffered the negative effect of multiple risks on children's self-efficacy, β = .20, p = .04 (β = .20, p = .03, when we controlled for childcare quality). On the other hand, the duration of childcare increased, by trend, the negative effect of multiple risks on children's emotional problems, β = .15, p = .06. (β = .14, p = .06, when we controlled for childcare quality). There were no significant moderation effects of duration of childcare regarding teacher-reported problems or competences.

In sum, moderation effects of childcare quality and quantity on the relation between multiple risks and adult reports of children's problems and competences were mostly independent of each other. The moderating impact of childcare quality was not affected by including childcare quantity in the models. Regarding childcare quantity, only the effect of intensity on teacher-reported conduct problems was not maintained when measures of

childcare quality were taken into account. Additionally, the moderation effect by trend on emotional problems turned significant when we introduced childcare quality into the model.

5.5 Discussion

The aim of this study was to investigate the impact of quality and quantity of center-based early childcare on social-emotional outcomes of 3- to 5-year-old children—especially children who are exposed to multiple risks. The following aspects were considered: (1) direct and indirect effects (moderation effects) were analyzed (main effects model and interaction model), (2) multiple biological and psychosocial risks were included, (3) different dimensions of childcare quality and different variables of childcare quantity were investigated, and (4) social-emotional outcomes were rated by parents and teachers (multi-informant-approach). Additionally, effects of gender and age were controlled in all analyses.

5.5.1 Multiple Risks and Children's Adjustment

Multiple risks were associated with emotional problems and hyperactivity. However, effects of multiple risks on children's adjustment were found only in teacher reports. The negative impact of multiple risks on children's adjustment was small overall. The reasons for this may lie on the side of risks. It can be assumed that negative effects of risks in early childhood show up clearly only at a later age (e.g., Ihle et al., 2002). Additionally, of the 17 risk factors that we included in the risk index, 3 were biological and 14 were psychosocial. According to Laucht, Esser, and Schmidt (1997), the impact of biological risks on children's outcome decreases with age, whereas the influence of environmental psychosocial risks increases. Another reason may be that—on children's individual level—exposure to risk predominantly did not exceed one or two risk factors. Our sample was therefore not a high risk group for which greater impact on child outcomes would be expected (e.g., Laucht et al., 2000; Rutter, 2000). Although we suppose that this reflects the common risk situation of children in Swiss childcare centers, this "floor effect" could contribute to the missing

associations of multiple risks and children's adjustment in this sample. On the other hand, there may also be reasons regarding outcome to explain the lack of predictive effects of multiple risks. First, we did not assess children's problems in a clinical setting. Therefore, there may be fewer children whose (problematic) behavior can be assessed with the Strengths and Difficulties Questionnaire. Second, psychosocial risks may affect not only children but also their parents. Parents may be engaged with these problems (e.g., struggling because of financial worries or mental health problems) and therefore be less sensitive regarding their child's behavior (e.g., Harvey, Fischer, Weieneth, Hurwitz, & Sayer, 2013).

5.5.2 Childcare Quality and Children's Adjustment

The results on the effects of childcare quality show that high-quality provisions for learning as well as teaching and interaction are beneficial for social-emotional outcomes in all children, regardless of their risk backgrounds. Parents report fewer externalizing problems, the higher the quality of provisions for learning, such as developmentally-appropriate spatial layouts and equipment, with different areas for different experiences (for example, generous spaces for active play, cozy corners for quiet time) and availability of a variety of materials and activities, providing children with all kinds of learning opportunities.

High-quality teaching and interaction, such as attentive and individual supervision and assistance with children's play and learning activities, sufficient opportunities for positive peer interactions, and responsive reactions by the teachers support prosocial behavior and fewer emotional problems in the children. In line with research on adult-child interations, high-quality teaching and interaction provide opportunities for children to learn about social interactions through modeling and scaffolding (e.g., Siraj-Blatchford, Sylva, Taggart, Sammons, & Melhuish, 2002). These studies showed that children take more initiative and are more likely to be actively involved and persistent in their activities when teachers are responsive, guiding, and encouraging. Children may benefit in terms of authenticity towards

others and openness to and availability for social interactions. Peers may also serve as an important source of social support in terms of positive peer culture (e.g., Criss, Pettit, Bates, Dodge, & Lapp, 2002).

The findings underline the importance of high process quality for promoting all children's learning and development. The results are in line with previous research that also found positive effects of high childcare quality on children's social-emotional development (e.g., ECCE Study Group, 1997, 1999; Loeb et al., 2004; Peisner-Feinberg et al., 2001; Sammons et al., 2008; Votruba-Drzal et al., 2010).

5.5.3 Childcare Quantity and Children's Adjustment

Like other studies (e.g., Cooper et al., 2010; Loeb et al., 2007; NICHD, 2003), we found unfavorable effects of a high intensity of center-based early childcare on children's social-emotional development: Children who attended childcare more days per week had higher scores on externalizing problems. In contrast, however, as assessed by parents, children's attendance at the childcare center was associated with less hyperactivity (in tendency). These findings indicate that intensity of childcare has a negative effect on children's externalizing problems, whereas there is a positive effect of duration of childcare on externalizing behavior as well. This may be contradictory at first glance. But there are various reasons for these relations. Lower externalizing problems for children with longer duration of childcare may reflect the children's higher security and habituation within the childcare setting and their more stable relations with teachers and peers. Additionally, children who are in childcare for a longer period may receive less or different attention (e.g., playing alone or with peers more autonomously, without teachers' constant direct supervision) than children who are still in the "settling-in" phase. This phase of familiarization with a new environment is characterized by numerous transitional situations (e.g., Griebel & Niesel, 2011) that may be difficult for children at the beginning of childcare

but familiar to children with a longer history of childcare. In sum, the different nature of the variables has to be considered: Intensity is a selective variable, whereas the duration of childcare comprises continuity including processes of habituation and familiarity.

5.5.4 Multiple Risks, Childcare Quality and Quantity Predicting Children's Adjustment

With simultaneous modeling of the effects of multiple risks and childcare quality and quantity on 3- to 5-year-old children's social-emotional competences and problems, we found effects for all of the predictors included (main effects model). Multiple risks are associated with lower self-efficacy and more emotional problems. Good provisions of learning lead to fewer externalizing problems. High-quality teaching and interaction support the development of prosocial behavior but are also associated with more emotional problems. Implementation of professional key tasks by teachers predicts higher self-efficacy in children. High intensity of childcare leads to higher self-efficacy but also to more externalizing problems. Earlier childcare is associated with less hyperactivity. Therefore, despite the inclusion of process quality, this study found unfavorable effects of the childcare quantity on children's social-emotional development (see, for example, Rossbach, 2005).

5.5.5 Effects of Gender and Age

As expected, parents and teachers reported more prosocial behavior and self-efficacy and fewer conduct problems and less hyperactivity in girls. This is in line with the finding that boys were reported to be more aggressive and to show more externalizing problems than girls (e.g., Deater-Deckard et al., 1998), and it may also be due to adults making stereotypical attributions (Keenan & Shaw, 1997).

Older children were reported to have higher self-efficacy and lower emotional problems, but they were also reported to show more conduct problems. The finding that self-efficacy was higher for older children may be explained by the advanced development of

autonomy: older children are expected to be more conscious about their abilities and their effectiveness. Additionally, older children may have overcome the separation anxiety that would be developmentally appropriate for younger children. Older children may be less likely to show emotional symptoms (e.g., crying, withdrawal) in separation situations (e.g., parents leaving the childcare center) than younger children are (e.g., Gardner & Shaw, 2008). On the other side, the assessment with the General Self-Efficacy Scale may have been more appropriate for older children, as it was not originally designed for children as young as those in our study.

5.5.6 Childcare Quality as Moderator

In this study we found moderation effects of different dimensions of process quality regardless of the childcare quantity (interaction model): Good provisions for learning and high-quality teaching and interaction reduce the negative effects of multiple risks with regard to emotional problems in children aged 3-5 years. Implementation of professional key tasks (observation and documentation of children's learning, internal and external communication, and individualization of educational processes) works as a protective factor for prosocial behavior and self-efficacy in children with exposure to multiple risks. These findings are in line with Hall et al. (2013), who found protective effects of high-quality interactions (however, in combination with a longer duration of childcare) on self-regulation and antisocial behavior in children with child risks. Although the effects found in this study were rather small, they still underline the great importance of high process quality, especially for children with risks. In particular, the role of professional key tasks in the everyday routine at childcare centers has up to now been underestimated and overlooked with regard to enhancing children's development. Attendance at a childcare center with high-quality provisions for learning, teaching and interaction, and professional trained staff can have compensation effects for children who are exposed to multiple risks.

5.5.7 Childcare Quantity as Moderator

The study also demonstrates moderation effects of childcare quantity (interaction model). The effects differ, however, depending on whether childcare quality was considered. Intensity of childcare was found to be a protective factor for externalizing problems, and prosocial behavior for children with multiple risks when childcare quality was not included. The moderation effects of childcare intensity on hyperactivity and prosocial behavior also remained when childcare quality was included in the analysis. However, an opposite moderation effect was also found: For children with multiple risks, intensity of childcare works as an additional risk factor for parent-reported emotional problems (when including and not including the childcare quality).

Duration of childcare was revealed to be a protective factor for self-efficacy (regardless of the childcare quality). These findings are thus in line with the study by Hall et al. (2013), which also found duration of childcare to be a protective factor for antisocial behavior in children with child risks (however, without including childcare quality). But in parents' assessments we find also that duration of childcare has negative moderation effects on the development of emotional problems in children. Thus, as was the case with intensity of childcare, here again parents' and teachers' reports differ with regard to the protective effects of childcare.

5.5.8 Differences in Parents' and Teachers' Reports

In line with other studies we have found parents' and teachers' reports to diverge (e.g., Achenbach, McConaughy, & Howell, 1987). In this regard, several aspects have to be considered: (a) Parents and teachers may have different views, perceptions and expectations of the child, because they interact in different (cultural) contexts (e.g., Dinnebeil et al., 2013; Harvey et al., 2013). Additionally, parents may be emotionally involved in a different manner, (b) Children may behave differently in different environments and, for example, be

very unobtrusive within the group at the childcare center but showing externalizing problems at home (e.g., van der Ende et al., 2012), (c) Teacher ratings have been associated with classroom characteristics ("classroom effect"; e.g., Winsler & Wallace, 2002), (d) Parents' well-being, parental symptomatology and stressful family conditions may account for informant discrepancies (Harvey et al., 2013). Children may behave different with distressed parents than with other adults, (e) Teachers interact with many children of the same age and tend to compare one child's behavior with another's. Thus, teachers may be rating children in their classroom similarly (e.g., Hamre, Pianta, Downer, & Mashburn, 2007; Dinnebeil et al., 2013), and (f) Consistency is greater for observable externalizing behavior than for internalizing problems (e.g., Achenbach et al., 1987). These behavior patterns are more difficult to ignore and therefore an issue for greater agreement.

5.5.9 Strengths and Limitations

Today, early childcare is a main source of experience for many children. Our study underlines the importance of including childcare quality and quantity when investigating the relation between multiple risks and children's social-emotional outcomes. This expands what is known about the direct and indirect effects of childcare on social-emotional aspects of the development. Further, we applied very strict criteria for the composition of the multiple risk index—e.g., we did not include gender or ethnicity as a risk factor. Additional aspects that expand the results of our study are the application of two protective models of risk and resilience as proposed by resilience research literature, the main effects model and the interaction or moderator model. Both models are proffered for studying protective mechanisms in the relation of risk and outcome. Beyond that, we used a multi-informant approach. We included parent and teacher reports for the measurement of the social-emotional outcomes. In addition to this multi informant approach, we did not use only problem behavior for the measure of social-emotional outcomes. As resilience is

characterized not only by the absence of problems but also by the presence of resources (e.g., Masten & Coatsworth, 1998), we included different measures of children's competences.

When interpreting the results, several aspects of the study have to be considered. First, we did not apply a longitudinal design. The assessment of childcare quality with one measurement only may be delicate with regard to the frequent turnover of the teachers in childcare centers in Switzerland. Second, because of the time and effort required for assessment of process quality, not all groups at every childcare center could be included. We had to take a random selection of the groups. Therefore, our sample is rather small. Third, the General Self-Efficacy Scale was not designed originally for children of this age. Nevertheless, because of the good indices of the models we decided to use them. Fourth, we did not control for the quality of home learning environment, and we had no external reports for the risks regarding parents (e.g., parents' mental health problems). Fifth, we did not control for other structural quality variables of childcare (e.g., adult-child ratio, group size, or age differences within the groups) or for prior adjustment of the children. And finally, an alternative approach would be to compute cumulated risk indexes for different domains separately (e.g., biological, familial, socio-economic) or to analyze the specific contribution to children's developmental outcomes of individual risk factors separately.

5.5.10 Conclusion

High-quality teaching and interaction, good provisions for learning (e.g., space, materials, and activities), and the implementation of professional key tasks in everyday practice (such as observation and documentation on children's early learning and development, involvement and exchange of views between teachers, parents, and children) have a positive effect on various aspects of children's social-emotional development. Additionally, high-quality teaching and interaction, good provisions for learning, and the practice of professional key tasks buffer the negative effect that multiple biological and

psychosocial risks can have on children's adjustment. As resilience research proved: Children are not born "resilient". What constitute the development of resilience are experiences of social relations. Such experiences offer relationships defined by attention, encouragement, and responsiveness, role models, who exemplify an adequate coping behavior, as well as developmentally appropriate stimuli and challenges, which promote the experience of self-efficacy. For children at risk significant others outside their family are essential. Especially children who are exposed to familial risks need experiences of recognition, reliability, belonging, and care outside their home. In this context, attendance at a childcare center can offer a considerable place for safety, attention and new learning opportunities. By continuous observations the teachers can identify the needs and potentials of the child and respond adequately to them.

In sum, high childcare quality in center-based early childcare can mitigate the negative effects of multiple risks on emotional problems, prosocial behavior, and self-efficacy of children (independent of childcare quantity). Intensity and duration of childcare can minimalize the negative impact of multiple risks to hyperactivity, prosocial behavior and self-efficacy of children (when controlled for childcare quality). Both, qualitative and quantitative indicators of center-based early childcare have, therefore, the potential to serve as protective factors for promoting resilience in the social-emotional development of young children at risk.

Table 5

Descriptive Statistics of the Relevant Study Variables

	N	M	SD	Min	Max
Quality of childcare[a]					
Teaching and interaction[b]	42	5.06	.87	3.00	6.38
Provisions for learning[c]	42	2.79	.60	1.57	4.08
Professional key tasks[d]	31	3.13	.89	1.00	5.00
Quantity of childcare					
Intensity of childcare	162	4.31	1.90	1.00	9.00
Duration of childcare	162	2.67	.74	1.02	4.04
Multiple risk score	162	.05	.05	.00	.29
Parent reports of (mal)adjustment					
Conduct problems	143	1.49	.37	1.00	2.80
Emotional problems	143	1.26	.31	1.00	2.25
Hyperactivity	143	1.54	.41	1.00	3.00
Prosocial behavior	143	2.65	.35	1.50	3.00
Self-efficacy	142	3.00	.34	2.00	4.00
Teacher reports of (mal)adjustment					
Conduct problems	162	1.44	.41	1.00	2.60
Emotional problems	162	1.28	.41	1.00	3.00
Hyperactivity	162	1.53	.49	1.00	3.00
Prosocial behavior	162	2.45	.43	1.25	3.00
Self-efficacy	162	2.80	.51	1.00	4.00

Note. [a]Measured on group level. [b]ITERS-R: Cronbachs α = .82, ECERS-R: Cronbachs α =.80. [c]ITERS-R: Cronbachs α = .59, ECERS-R: Cronbachs α =.66. [d]ECERS-Z: Cronbachs α =.60.

Table 6

Fit Indices of the Main Effects Models Including Children's Problems and Competences

	Model 1	Model 2	Model 3	Model 4	Model 5
χ^2	72.74	109.67	113.17	84.73	362.58
df	65	96	96	67	308
p	.24	.16	.11	.07	.02
CFI	.97	.96	.97	.93	.95
RMSEA	.03	.03	.03	.04	.03
SRMR	.05	.05	.04	.05	.05

Note. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual. Model 1 including emotional problems. Model 2 including conduct problems. Model 3 including hyperactivity. Model 4 including prosocial behavior. Model 5 including self-efficacy.

Table 7

Associations between Children's Competences, Quality of Childcare, Quantity of Childcare, and Control Variables (Main effects models)

	Standardized regression weights						
	Teaching and interaction	Provisions for learning	Professional key tasks	Intensity of childcare	Duration of childcare	Age	Gender
Parent report							
Prosocial behavior	.06	.06	-.16	.10	.14	-.02	-.43***
Self-efficacy	.08	-.04	-.03	.17†	-.17	.07	-.11
Teacher report							
Prosocial behavior	.20**	-.04	.07	-.00	.02	.01	-.28**
Self-efficacy	.15	.04	-.15†	.14	.03	.19*	-.13†

Note. Values for gender: 1 = girls, 2 = boys.

† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 8

Associations between Children's Problems, Quality of Childcare, Quantity of Childcare, and Control Variables (Main effects models)

	Standardized regression weights						
	Teaching and interaction	Provisions for learning	Professional key tasks	Intensity of childcare	Duration of childcare	Age	Gender
Parent report							
Emotional problems	-.33**	-.01	-.15	.04	.09	-.14†	.02
Conduct problems	-.07	-.31***	.17	-.03	.10	-.11	.23*
Hyperactivity	.00	-.20*	.05	.21*	-.19*	.05	.25**
Teacher report							
Emotional problems	.01	-.07	-.05	-.02	-.02	-.06	-.06
Conduct problems	.05	-.16	-.09	.30***	-.07	.20*	.14†
Hyperactivity	-.01	.10	-.10	.21*	-.13	-.01	.26***

Note. Values for gender: 1 = girls, 2 = boys.

† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

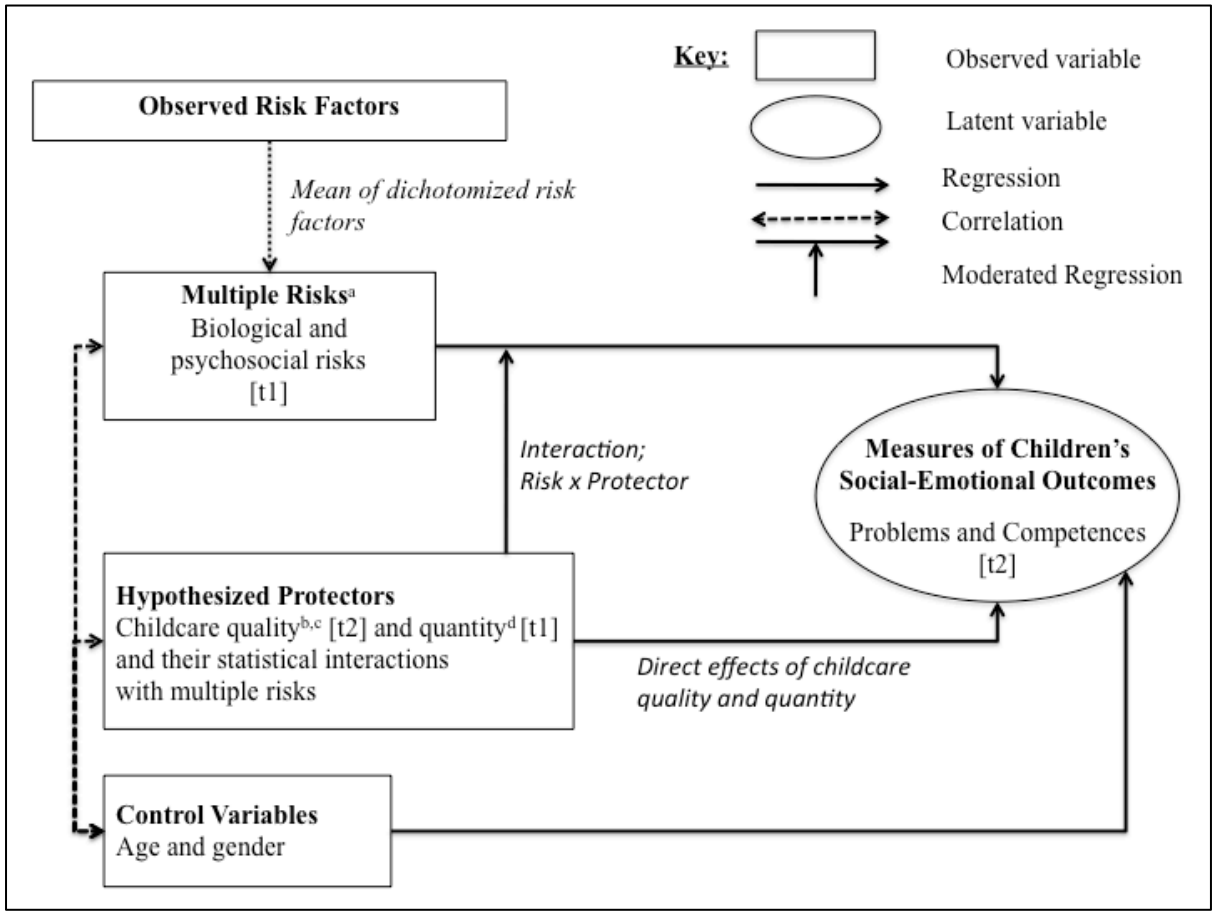

Figure 4. Stylized path diagram illustrating the structural equation models used to analyze the direct and moderation models of resilience. [a]Multiple Risks = 17 in total: 14 psychosocial, 3 biological. [b]Childcare Quality = 3 Indicators: Provisions for learning, Teaching and interaction, Professional key tasks. [c]Derived from exploratory factor analysis. [d]Childcare Quantity = 2 Indicators: Intensity of childcare, Duration of childcare.

6 General Discussion

This dissertation includes three studies that can be seen within the broader context of resilience research. On the basis of the socio-ecological model (Bronfenbrenner, 1979, 1994) aspects of children's self and their proximal and distal environment were investigated. The initial validation of the developed self-report instrument for preschool children in Müller, Wustmann Seiler, et al. (2014) showed that their reports about self-perceived ability, task difficulty, and motivation were consistent with Nicholls' (1978, 1980, 1984; Nicholls & Miller, 1983) theory on a person- and variable-oriented level. However, the assumed correlation with adult-reported symptoms was missing. Because of the explorative nature of the study, risk factors (as would be required in terms of resilience, e.g., control of family environment) were not included yet with regard to comprehensibility and complexity of the reported results.

However, the study has the advantage of including children as young as 3 years old and showing that they are capable of reporting about themselves. Further, positive self-concept and effective task mastery were also based on children's reports and showed a significant relation to self-perceived ability. Especially children's task mastery is commonly assessed by adult reports (mainly with marginal associations between children and adults). The study expands the knowledge about the association of young children's self-reported ability, the perception of task difficulty and motivation, which is rarely investigated yet. Additionally, the need for age-appropriate instruments is emphasized.

Children's mental representations that are supposed to be reflected in conflict-based narratives and which in turn influence children's behavior were investigated in Müller, Perren, and Wustmann Seiler (2014). Additionally, exposure to family risk was included in the analyses. Coherence and content of conflict-based narratives were tested for direct, mediating, and moderating effects. Coherence and content of conflict-based narratives had a

direct impact on adult-reported symptoms but also buffered the negative influence of family risk on children's internalizing and externalizing problems.

In comparison to other studies, we included more and other risk factors. Our risk index comprises a wider spectrum of possible factors of risks (i.e., it subsumes many of the factors that were assessed in other studies separately, for example intimate partner violence, low income, or psychological problems of the mother) and therefore the findings expand the knowledge about cumulative risks in the family and children's mental representations. Additionally, although different studies (including our one) are measuring family risk differently and also other stories were used, the results seem to be similar. This finding supports the further use and examination of the story stem technique. However, the main addition to existing literature it the thorough investigation of mediating and moderating effects and going thus beyond results describing associations between story stems, risks and child outcomes, which is, however, theoretically and practically meaningful and reasonable. Further, the consideration of internalizing problems as outcomes contributes to the rather marginal knowledge due to diverging results and fewer studies dealing with narratives and internalizing problems as compared to externalizing problems. Again, there are few studies that included children at age 3 years, although conflict-based narratives are supposed to be applicable with children this young.

Wustmann Seiler et al. (2014) examined direct and moderating effects of quantitative and qualitative indicators of center-based childcare on children's outcome. Multiple biological and psychosocial risks were included. Quantitative and qualitative indicators of center-based childcare were found to have the potential to serve as a protective factor for children's social-emotional development. However, there are also indications of negative effects that are in line with the heterogeneity within the current literature and that have to be considered by further research. The advantages of the study were mainly the more stringent

criteria regarding the risks (e.g., gender was not included), the inclusion of competences in addition to children's problems, the multi-informant approach in the assessment of children's problems and competences, and the analysis with separate dimensions of center-based childcare (as compared to an overall index).

The three studies raised research questions, and in sum, the results lead to meaningful and relevant conclusions. However, as research always has to be linked to practice, some relevant aspects of this research are highlighted in the following paragraphs and connections between empirical results and practical implications and possibilities are made. Although discussed in separate paragraphs, the three studies are referred to each other. Further, also some limitations of the reported studies are addressed.

6.1 Empirical Results: A Bridge to Resilience and Implications for Practice

Especially the findings reported in Müller, Wustmann Seiler et al. (2014) and Müller, Perren, and Wustmann Seiler (2014) emphasize the use of self-report instruments with children as young as 3 years old. The following two paragraphs report on the importance and use of children's self-reports in terms of resilience and practical (potential) benefits. Children's proximal environment is considered as well. The third paragraph then expands the discussion on early childhood resilience by taking into account children's daily distal environment.

6.1.1 Study 1

The results of Müller, Wustmann Seiler, et al. (2014) are in line with earlier research that argues in favor of self-reports of young children. Measelle et al. (1998) argued: "Because children are often the best informants about their own internal feelings of distress, more attention must be paid to the patterns of association between child self-report and the more commonly utilized assessments by adult informants" (p. 1157). According to Marsh et al. (2002), there is "growing evidence that children make evaluative self-descriptions at very

young ages" (p. 378). Ladd (1990, 1996) reported that kindergartners differentiate between how they are perceived by peers and how they view their own social efficacy and concluded that young children have more differentiated concepts of themselves than previously thought. However, behavioral observation and reports by others (adults) are the common methods for assessing internal constructs or processes of children (Eder & Mangelsdorf, 1997; Marsh et al., 2002). The multi-informant approach is often used, including parent and teacher reports of children's symptoms. However, van der Ende et al. (2012) stated that ratings of informants are not interchangeable and even concluded that it is precisely disagreement that provides the possibility of obtaining more information than when informants agree.

Although children's risk exposure (which would, however, be a crucial factor in resilience research, e.g., Masten, 2001) was not included in analyses, the assessment of self-perceived ability is nevertheless important, for resilient individuals are described as relying on their ability even in the face of hurdles and being confident that they can overcome them (Werner, 1993). Perceptions concerning one's own ability are supposed to be cognitive schemas (see section 1.2.1). Cognitive models relate these mental structures to children's psychopathology or well-being, respectively. Keyfitz et al. (2013) found an association between positive self-schemas and depression, anxiety, and resilience. Additionally, these positive schemas explained variance of these outcomes that was beyond that explained by negative schemas. Keyfitz et al. concluded that positive self-views may be protective against maladjustment and may contribute to children's well-being and an increased sense of competence. They underlined the importance of low levels of positive schemas with regard to psychopathological development and the need to consider positive schemas in terms of resilience. Furthermore, self-perceived ability was identified as the core element of self-efficacy, which, in turn, was confirmed to be an important resource for children's healthy development (see section 1.2.1.2).

In practice, knowledge about children's self-perceived ability may be useful to therapists for gaining access to children's self-perception and thus for supporting children to develop a stable positive perception of competence. The self-perception of children's abilities does not have to be absolutely realistic. As described theoretically and shown empirically in Müller, Wustmann Seiler, et al. (2014) (mean of self-perceived ability, see Table 1), young children commonly show a shift towards an unrealistic positive perception of their own abilities. Although for example Hoza et al. (2002) suggested that unrealistically positive self-perception is associated with children's behavior problems (i.e., ADHD), Taylor and Brown (1988) proposed an adaptive effect of positive illusions on motivation, performance, and task persistence. The positive correlation between self-perceived ability and motivation as well as task mastery in Müller, Wustmann Seiler, et al. (2014) is in line with that proposal, whereas we found no associations with children's conduct problems.

Children's proximal and distal environments contribute to the formation of mental representations and therefore their self-perception. These relations have to be considered in research but also in practice. In a therapeutic setting, of course, the anamnesis of potential influence factors on cognitive schemas is crucial, whether the schemas are positive or negative. The research in Müller, Wustmann Seiler, et al. (2014) has to be seen rather in terms of primary prevention, as the promotion of positive self-representation can be beneficial for all children and especially those that will be exposed to risks later in life.

6.1.2 Study 2

In line with Müller, Wustmann Seiler, et al. (2014), conflict-based narratives proved to be another self-report instrument for young children in Müller, Perren, and Wustmann Seiler (2014). In a review, Oppenheim (2006) concluded that psychopathology is associated with coherence and content of conflict-based narratives, which was confirmed in our study. Although conflict-based narratives are not equivalent to common self-report instruments that

assess symptoms through direct questions (which can be difficult for preschoolers), conflict-based narratives provide a low-threshold possibility of "self-report" assessment of psychopathology with young children (Harter & Pike 1984; Oppenheim, 2006). Besides this, because of the playful character of the assessment, the relationship between the child and the therapist may also benefit (Buchsbaum, Toth, Clyman, Cicchetti, & Emde, 1992). This may be especially relevant for children who have been exposed to risks (e.g., maltreatment). Oppenheim (2006) concluded that developing a meaningful and coherent narrative about an aversive or difficult experience could help children to process the information and therefore cope better. In line with this, Fiorentino and Howe (2004) stated: "If children living in poverty are able to make sense of their experiences, this may contribute to the ability to deal with life's difficulties and, therefore, may demonstrate an augmented degree of adaptability or effective coping strategies" (p. 282). Of course, this statement refers not only for children living in poverty but also for other life situations that children need to make sense of.

The play situation also provides an opportunity to express feelings, wishes or fantasies that are not "adequate" in daily life (Warren et al., 1996). Additionally, as children's narratives have also been supposed to indicate on their emotion regulations strategies (e.g. Clyman, 2003), narratives may also be a way to help children to regulate their emotions.

The described advantages of story stems can also be applied for development of other instruments to assess children's self-reports. Designed with playful characteristics as it was done in Müller, Wustmann Seiler, et al. (2014), instruments of this kind could provide a low-threshold possibility of "self-report" and be beneficial for the relationship between child and therapist. Again, especially shy, traumatized, or maltreated children could profit.

Further, depending on the stories provided, different themes are elicited (Warren, 2003). Therefore, conflict-based narratives can be an adequate instrument for the assessment of a wide range of children's' symptoms. However, for clinical use of story stems, the stories

have to be adapted (e.g., considering the change in children's narratives by means of repeated assessment), and clinical interviews have to be applied for the assessment of children's symptoms (in diagnostic and control groups) (e.g., Warren, 2003). Von Klitzing et al. (2007) showed that coherence and content of children's conflict-based narratives were significantly associated with children's social competence and these relations showed even more in clinical children, indicating the need and potential of narrative assessments. Even though we did not use diagnostic interviews to assess children's maladjustment, results can be interpreted in line with research that proposes "narratives as ports of entry for intervention" (Oppenheim, 2006, p. 785) or even prevention of later disorders.

The accumulation of different family risks was found to be associated with children's symptoms (according to the cumulative risk model) and the content of conflict-based narratives. Nevertheless, as children's symptoms are multi-determined, there have to be factors other than family risks and children's mental representations that influence children's developmental outcomes (e.g., biological determinants). Accordingly, as only aggressive themes are correlated to family risk, there have to be other factors than those measured that contribute to the formation of children's mental representations. However, the results of Müller, Perren, and Wustmann Seiler (2014) indicate that coherence and content have the potential to serve as a protective factor against exposure family risks and therefore have to be considered in terms of resilience.

So far, the discussion, has touched on integrating children's representations—whether in the context of self-perceived abilities or conflict situations—in promotion of preschool children's mental health with Müller, Perren and Wustmann Seiler (2014) taking into account also children's proximal environment (family). Children's distal environment and early childhood resilience was considered in Wustmann Seiler et al. (2014).

6.1.3 Study 3

Research on early-center based childcare and subsequent transfer of the findings into practice is urgent, as center-based childcare is already the norm for many families and communities and a part of children's daily experience. As described above (see general introduction, section 1.3), this development is not likely to decrease in coming years. Of course, compared to the childcare center environment, children's home environment is still the crucial factor (with effects twice the size) (NICHD, 1998, 1999, 2000). However, Bronfenbrenner (1994) underlined the importance of children's family but also their [pre]schools and peer groups because of the immediate influence on children. In line with other studies, our results provide support that the influence of childcare quality is meaningful as well—or in addition. High-quality center-based childcare has an impact on different levels, that is for the individual as well as for the broader society. Vandell and Wolfe (2000) concluded that children who receive high-quality of center-based care benefit in terms of cognitive and linguistic competencies, school readiness, and later school achievement as well as in their social interactions. These benefits could in turn be reflected in effects at the societal level, e.g., in lower costs for subsequent schooling, future reductions in crime, or lower costs for social services, and so on (Vandell & Wolfe, 2000). Vandell and Wolfe emphasized especially the possibility of equal opportunities that center-based childcare *could* provide. At present, children from low-income and low-educated families often receive lower quality childcare because of the financially based "choice" of the childcare center (Blau, 1999; Peisner-Feinberg & Burchinal, 1997). For children who have to cope with adversities, high-quality childcare can be a chance. For instance, mothers or fathers who raise their child alone need significantly more days of childcare services per week for their children, which is related to their higher labor force participation (BFS, 2008) and children of parents with low educational attainment or in low-income families were found to profit from early access to

high-quality center-based childcare (e.g., Peisner-Feinberg et al., 2001; Sammons et al., 2008). There is thus an urgent need to promote high-quality childcare independently of financial barriers.

In sum, high-quality childcare promotes competences and minimizes symptoms on a social-emotional level, and based on other studies (see section 1.3.2), there can be reasonable hope that these influences can be seen into adulthood. However, further research is needed, as it is not yet clear what the premises or conditions are such that positive effects of early childcare quality affect children's development in the short or long term. This is also reflected in the results of Wustmann Seiler et al. (2014), as we found that indicators of childcare quality mainly buffer but also—in other constellations—increase the effect of multiple risks on social-emotional outcomes of the children. Despite this, center-based childcare may serve as prevention or intervention on a low-threshold level that is also accessible for children with difficult backgrounds. The chance of providing resilience-promoting conditions to a large number of children without restriction for financial reasons has to be seized, and policy has to take advantage of the "at hand" potential of early childhood education in the context of center-based childcare.

Referring to the diversity of definitions of resilience described before (see section 1.1.1), one that reflects the research in this dissertation project is by Masten, Best, and Garmezy (1990), who defined resilience as "the process of, capacity for, or outcomes of successful adaptation despite challenging or threatening circumstances" (p. 426).

6.2 Challenges and Limitations

Despite the reported advantages of the three studies (see above in the general discussion), some study-related and some general limitations have to be considered as well. The parent interview on risk factors and the development of the instruments for the second measurement with the children (namely, the self-report instrument and the new story stems)

had to be prepared within a very narrow time period. Originally, the child interview was intended to be analyzed differently, examining the internal structure (i.e., taking into account the sequence of the tasks) more than the overall score of the tasks. With regard to reported analyses in Müller, Wustmann Seiler, et al. (2014), the tasks could or should have been developed differently (e.g., no difference in the first task between the age groups), and focusing on the overall and not on the within structure of the instrument. In contrast to other studies (e.g., Measelle et al., 1998), we did not find a correlation between adults' and children's reports. Therefore, self-perceived ability may correlate with other available variables, such as risk factors or quality of childcare. Also behavior within the peer group could reasonably be linked to self-perceived ability (Nelson et al., 2009).

The new story stems that we used in Müller, Perren, and Wustmann Seiler (2014) were developed within the frame of the broader intervention study and therefore not specifically for the topic the resulting paper. They were designed to elicit experience of success and failure, and this also with the additional conflict of a comparison with peers. However, the use of three stories from the original story stem battery may have been a better choice in terms of reliability and validity and therefore comparability to other studies. Nonetheless, the stories were developed with the help of Stephanie Stadelmann, who is an expert on the story stem method. Further, it is usual that the different stories and their coding are aggregated and not analyzed separately; therefore, there is no direct association between specific contents and outcome measures. Additionally, although we used our own stories, the results showed to be comparable to other studies that used the original battery. This is an interesting finding per se and supports the use of our stories and the resulting conclusions.

The training of the students who conducted the story stems was very short. Additionally, more adaptations of Stadelmann's (2006) manual would have been a possibility to expand knowledge on coding conflict-based narratives. Some adaptations (or rather

extensions) were made, but they are not profoundly analyzed and have therefore not been reported as yet (however, we addressed some preliminary analyses in the limitations of Müller, Perren, & Wustmann Seiler, 2014, see section 4.5.7).

Although coherence and content were modeled and theoretically assumed as predictors of children's internalizing and externalizing problems in Müller, Perren, and Wustmann Seiler (2014), the opposite direction of effects also needs to be considered. Internalizing and externalizing problems may develop depending on children's mental representations, but symptoms may reciprocally modify the mental representations.

Wustmann Seiler et al. (2014) addressed the criticism that the commonly used global composition scores cover some associations. Vandell and Wolfe (2000) pointed out that the different dimensions of the measurement instruments to assess childcare quality may have diverging effects on children's outcomes. Although we addressed this limitation of other studies by using the different sub-dimensions (teaching and interaction, provisions for learning, professional key tasks), the reported effects were moderate or even just a trend. According to Vandell and Wolfe (2000), this could be due to a restricted range of quality scores (which may be the case here, as means of the sub-dimensions would indicate) combined with a small sample size (which was partly caused by the matching of data from different partial studies within the larger research project "Promoting Learning and Resilience in Early Childhood Settings").

Regarding the conception of the computed models, there are some points to consider. First, according to Vandell and Wolfe's (2000) conceptual model, caregiver characteristics (e.g., caregiver training and education) should be included in the models, which we did not do for reasons of economy and comprehensiveness of the models and the results. However, structural aspects (e.g., child to adult ratio, group size, caregiver formal education, and caregiver specialized training) are considered to contribute by more distal means to a

combined quality measure. Indicators of structural quality were found to be related to process quality, so it is reasonable to assess and analyze them simultaneously (Phillipsen et al., 1997; Vandell & Wolfe, 2000). Further, Cryer et al. (1999) did not find one consistently powerful structural predictor of process quality; instead, different structural variables were shown to act together. Thus, when examining childcare quality many structural characteristics have to be included simultaneously. Additionally, Cryer et al. (1999) concluded that process quality might be a many-faceted construct, as structural characteristics did not explain the variance in process quality completely. And, if process quality is influenced by other means of childcare and in turn is supposed to affect children directly—this would suggest a mediation model, which we have not as yet conducted.

The limitation of measuring self-efficacy using the General Self-Efficacy Scale was already addressed in Wustmann Seiler et al. (2014). Regarding the Strengths and Difficulties Questionnaire—although it is a commonly used instrument—the question as to what a "positive adaptation" actually is still remains. However, this is a more general limitation that concerns resilience research in general. According to Fingerle (2011), social and cultural norms define what a positive or negative development is. Masten and Obradović (2006) raised questions as to "who decides or defines the criteria for judging good adaptation?" and "does resilience refer to positive internal adaptation, positive external adaptation, or both?" (p. 20). Although these questions cannot yet be answered, it is still important to keep them in mind.

In general, one aspect of children's proximal environment that the current literature emphasizes as crucial in association with children's development (positively or negatively) is parenting. There are various studies that reported on the one hand an association between different negative aspects of parenting (e.g., Williams et al., 2009; Stone et al., 2013) and children's externalizing and internalizing problems. On the other hand, parenting was also

described in terms of a resource (e.g., Wustmann, 2011). This is one important control that was not considered in this dissertation project. A broader assessment regarding parent reports may have provided other and additional findings, but it would not have been possible here due to time efficiency for parents and teachers. Parenting factors would also have been interesting to assess, as they were found to be associated with self-perception and mental representations in children's narratives (e.g., Coplan et al., 2004; Laible, Carlo, Torquati, & Ontai, 2004). Additionally, there are no data available to control for other potential impact factors on children's development. For example, Rutter (1999) also proposed consideration of individual differences in receptivity to environmental risks (e.g., temperamental and cognitive characteristics), which in turn have been affected by genetic and experiential influences. And lastly, Rutter (1993) stated that resilience could only be identified over time. For several reasons (time economy, financial budget) it was not possible to conduct a longitudinal study.

6.3 Implications for Further Research

The studies discussed in this dissertation answered some questions; others are still to be analyzed. For example, we applied the cumulative approach throughout the analyzed models emphasizing the number of risk factors. The advantages and theoretical rationale of this approach are described before in this dissertation (see general introduction, section 1.1.2). However, the results presented would be enriched with the addition of knowledge on the relative contribution of the different risk factors to children's developmental outcome measures. Although the cumulative risk index provides information about the quantity of risks, the detailed information of the single variables is lost. Burchinal, Roberts, et al. (2000) reasonably argued that any kind of regression provides better or more precise outcomes the more information about the underlying attribute the independent variable contains. However, this would depend on certain premises (e.g., sample size). Other researchers concluded that

single risk factors did not explain children's maladjustment sufficiently (Opp & Fingerle, 2008) (which may be caused by such restrictions as small sample sizes). In this dissertation project, sample sizes may be too small for a single variable approach. Therefore, an alternative approach would be to compute cumulated risk indexes for different domains separately (e.g., biological, familial, socio-economic) in all three studies in this dissertation. This would enhance especially the obtained results regarding children's self-perceived ability measures. There were no significant associations with parent- or teacher-reported conduct or emotional problems. Further analyses about the relations between risk exposure—whether cumulative, domain specific, or based on discrete variables—and the available dependent variables are needed.

The next steps also have to be the further combination of the data. Analyses could also emphasize the relation of self-representations and mental representations assessed in children's conflict-based narratives, e.g., a higher perception of self-perceived ability could be associated with more positive content themes and fewer aggressive themes. Or the modus of verbalization (see discussion in Müller, Perren, & Wustmann Seiler, 2014; section 4.5.7) could be correlated to self-perceived ability. Of course, the effect of childcare quality on children's self-reports is another challenging task. For example, the question if high-quality center-based childcare is related to higher self-perceived ability or more positive themes and higher coherence in children's conflict-based narratives would be a further combination of individual and environmental characteristics. As far as we know, there are no comparable data available as yet.

One major implication for resilience research is at the same time one major criticism, namely the absence of a unifying conceptual framework (Sameroff & Rosenblum, 2006). Addressing this concern, Sameroff and Rosenblum noted:

> A scientific basis for intervention research necessitates precise terminology to build upon earlier classifications and to ensure its continued vitality. A consistent and systematic framework is essential to facilitate the work of researchers and practitioners who pursue work in this area, to integrate findings across diverse fields, as well as provide guidance for the identification and implementation of age-appropriate, optimal targets for preventive interventions. (p. 116-117)

A more precise and distinct operationalization of the construct *resilience* is needed for further investigations and the integration of this concept across different disciplines and relevant areas (Sameroff & Rosenblum, 2006).

Besides this concern, there is a need to advance the development and validation of self-report instruments for very young children. Age-adapted self-report instruments have to address children's self-perceptions and their processed and stored experiences with their environments to expand our knowledge about children's view of the word. Further, the different components and conjunctive processes underlying the multi-leveled construct of resilience have to be scrutinized. In this dissertation project, different aspects of the individual and its proximal and distal environment were investigated, which can be regarded as important components of resilience processes. Although some associations were included here, further research has to focus on further determinants of these three levels and the processes between them. Masten and Obrandović (2006) described resilience as "a broad conceptual umbrella" (p. 14); it is necessary to identify and combine different resources that children themselves and their daily environments provide.

6.4 Conclusion

In general, children's maladjustment is supposed to have an early onset and enduring consequences. Therefore, the identification and investigation of potential resources in the child and its environments as well as the development and validation of age-adapted

instruments for the assessment of relevant resilience factors has to be continued. The earlier an intervention—or even better a prevention—can start, the greater the chance of a (persisting) positive development. Thereby, the reciprocal interactions between the child, its proximal and distal environment have to be involved as, on the one hand, these surroundings have the negative potential to undermine children's individual capabilities and limit their opportunities. And on the other hand, children's environments provide plenty of potential resources. Although resilience cannot be measured per se, the present dissertation provides components that are relevant in the broader context of resilience. Further research with the available data is needed to expand and at the same time solidify the results presented. Nonetheless, it is clear that resilience theory has the potential to affect children's lives positively (Ungar, 2011). I concur and conclude with Zolkoski and Bullock's (2012) statement: "Resilience theory offers researchers and practitioners a conceptual model to understand how children and youth overcome adversity and how this knowledge can be used to improve strengths and build positive characteristics of their lives" (p. 2301).

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APPENDIX

Appendix A: Example of the Child Interview for 4 Year Olds

A: Motor task: Balance on one leg for 5 seconds *(Demonstrate the task)*[7]	
1. Do you think it is difficult to balance on one leg for this long?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it is to balance on one leg?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
3. What do you think: Can you stand on one leg?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
4. How well can you stand on one leg?	❑ Not well at all ❑ Not very well ❑ Quite well (pretty well) ❑ Very well
5. Would you like to try it now?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
6. How much would you like to try it now?	❑ Not at all ❑ Not very much ❑ A little ❑ A lot
Have the child to perform the task.	
If the child was unable to perform the task, give the child your hand to hold on to. 7. Was the child able to perform the task? ❑ No *(The child was not able to stand on one leg without falling/putting the other foot down.)* ❑ Yes *(The child was able to keep his/her balance standing on one leg for a few seconds.)* ❑ Yes, with hints and additional motivation. ❑ The child did not want to perform the task.	

[7] Task A is different for all age groups (see Appendix B). All other tasks are the same in every group and only differ in the difficulty level.

B: Over challenge task: Throw ping pong ball into bowl	
1. Do you think it is difficult to throw the ping pong ball right into here? (point to the opening of the bowl?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it is to throw the ping pong ball right into the bowl?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
3. What do you think: Can you throw the ping pong ball right into the bowl?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
4. How well can you throw the ping pong ball right into the bowl?	❑ Not well at all ❑ Not very well ❑ Quite well (pretty well) ❑ Very well
5. Would you like to try it now?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
6. How much would you like to try it now?	❑ Not at all ❑ Not very much ❑ A little ❑ A lot
Have the child to perform the task.	
Do not help the child, no additional hints! (3 attempts) 7. Was the child able to perform the task? ❑ No ❑ Yes ❑ Yes, with additional motivation. ❑ The child did not want to perform the task.	

C: Compensation task: Build a tower *(2 large, 5 medium, 3 small blocks)*[8]	
1. Do you think it is difficult to build a tower - using all of these blocks - that does not fall over?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it is to build a tower using all of these blocks?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
3. What do you think: Can you build a tower using all of these blocks?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
4. How well can you build a tower using all of these blocks?	❑ Not well at all ❑ Not very well ❑ Quite well (pretty well) ❑ Very well
5. Would you like to try it now?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
6. How much would you like to try it now?	❑ Not at all ❑ Not very much ❑ A little ❑ A lot
Have the child to perform the task.	
If the child was unable to build the tower alone: – 4 blocks less (2 medium and 2 small ones) – 2 attempts 7. Was the child able to perform the task? ❑ No *(The child was not able to build a tower that did not fall down.)* ❑ Yes *(The child was able to build a tower that did not fall down.)* ❑ Yes, with hints and additional motivation. ❑ The child did not want to perform the task.	

[8] Number of small, medium and large blocks differs for the age groups. The older the child was, the more blocks it got.

D: Linguistic task: Retell a story	
I am going to tell you a short story, and you are going to listen carefully. 1. Do you think it will be difficult for you to tell me the whole story yourself afterwards?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it will be to tell me the whole story yourself afterwards?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
3. What do you think: Can you tell me the whole story yourself afterwards?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
4. How well can you tell me the whole story yourself afterwards?	❑ Not well at all ❑ Not very well ❑ Quite well (pretty well) ❑ Very well
5. Would you like to try it now?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
6. How much would you like to try it now?	❑ Not at all ❑ Not very much ❑ A little ❑ A lot

Have the child perform the task. First, tell the child this story:[9]
Today is Paul's/Paula's birthday. He/She will get a whole lot of presents and a big chocolate cake. He/She can invite all of his/her friends to come over. All of the children are happy to come, and they play together all day long. Now, can you tell me what happened in this story?

If the child cannot say anything, provide these hints:
- *What happened that day?*
- *Did Paul/Paula get anything?*

7. Was the child able to perform the task?

❑ No *(The child did not tell something about the story.)*
❑ Yes *(The child was able to tell at least one thing of the story.)*
❑ Yes, with hints and additional motivation.
❑ The child did not want to perform the task.

[9] The length of the story differs for the age groups. The older the child was, the longer was the story.

E: Challenge task: Choose between two puzzles *(A and B)*[10]	
1. Which of these two puzzles is more difficult, do you think?	❑ Difficult puzzle ❑ Simple puzzle
2. Which of these two puzzles would you rather do?	❑ Difficult puzzle ❑ Simple puzzle
3. Do you think it is difficult to do this puzzle?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
4. How difficult or easy do you think it is to do this puzzle?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
5. What do you think: Can you do this puzzle?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
6. How well can you do this puzzle?	❑ Not well at all ❑ Not very well ❑ Quite well (pretty well) ❑ Very well
7. Would you like to try it now?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
8. How much would you like to try it now?	❑ Not at all ❑ Not very much ❑ A little ❑ A lot
Have the child perform the task.	
If the child cannot do the puzzle, give these hints: – *Simple puzzle: These two pieces go together; now you can do it.* – *Difficult puzzle: You do half of the puzzle and ask the child to finish the rest.* *9. W*as the child able to perform the task? ❑ No ❑ Yes ❑ Yes, with hints and additional motivation. ❑ The child did not want to perform the task.	

[10] The difficulty of the puzzles differs for the age groups. The older the child was, the more complicated was the puzzle.

Appendix B: Motor Task for the Other Age Groups

A3 years) Balance on a line with obstacles *(Demonstrate the task)*	
1. Do you think it is difficult to balance on this line (*show it*) without touching one of the obstacles?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it is to balance on this line without touching one of the obstacles?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
A3.5 years) Carry a glass of water without the rubber duck falling down	
1. Do you think it's difficult to walk from here to there (*show it*) without tipping out the water and without the duck falling out?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it is to walk from here to there without tipping out the water and without the duck falling out?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
A4.5 years) Jump on one leg – three to five times *(Demonstrate the task)*	
1. Do you think it is difficult to jump on one leg only like this?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it is to jump on one leg only?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy
A5 years: Balance backwards without touching an obstacle *(Demonstrate the task)*	
1. Do you think it is difficult to balance backwards on this line without touching one of the obstacles?	❑ No ❑ Yes ❑ Maybe / Don't know ❑ No ❑ Yes
2. How difficult or easy do you think it is to balance backwards on this line without touching one of the obstacles?	❑ Very difficult ❑ A little bit difficult ❑ A little easy ❑ Very easy

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Publikationen

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